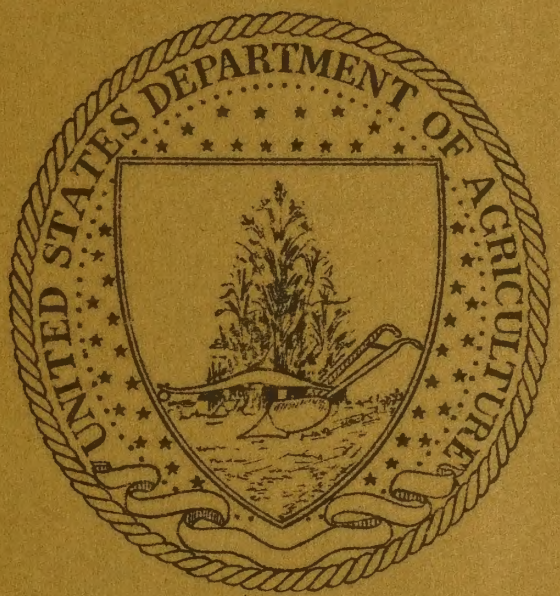
WATER SUPPLY AND SANITATION MANUAL



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UNITED STATES DEPARTMENT OF AGRICULTURE
FARM SECURITY ADMINISTRATION
DISTRICT I. REGION IV RALEIGH - N.C.

INTRODUCTION

Due to the importance of obtaining a protected source of water supply, and an approved sanitary system for farm dwellings, this phase of the construction work in the Farm Security Administration Program cannot be overestimated, and should be of first importance in the development of any farmstead unit. Dysentery, typhoid fever, diarrhea and intestinal trouble may all develop from bacilli and parasitic worms existing in contaminated water resulting from an unapproved water supply or sanitary system. In addition to the human element on a farm being effected, disastrous effects upon the livestock will also easily result from polluted water, in the form of tuberculosis, stomach worms, and cholera.

The discussions contained herein are to serve as a guide in selecting a particular type of water system for home use which will best serve the farm involved for a nominal cost, and which will, at the same time, be of an acceptable design. The material contained herein is drawn up to include quite a selection, from which the final choice is to be determined by the natural conditions of the particular area involved. The fact that natural conditions are the final factor in choosing a particular type of water supply in any locality cannot be overstressed.

Water supply for domestic uses can be obtained from anyone of several ways, namely; springs, shallow wells, dug wells, deep wells and cisterns, all of which can be protected provided the necessary precautions are taken at the time of their construction. Of the above, the deep well can safely be considered the most ideal supply, if necessary precautions are taken with respect to sewage disposal, outbuildings, etc. In some cases, springs are utilized quite frequently as substitutes for wells, and such arrangements are satisfactory if properly encased and chlorinated at the necessary intervals. However, in this program, the main object is to acquire a supply which is of such a quality as not to require treatment at particular intervals of time.

Sewage disposal is usually handled in rural area by one of the following ways: outside privies or septic tanks with disposal fields. Of these two methods, the septic tank is preferable,

but, in many cases, due to insufficient funds this type of construction must be dispensed with. However, the outdoor privy may, if properly constructed and maintained, be practically free of disease spreading qualities, although the common conception is not such.

With these facts under consideration, it can be seen that much care and though should be given in selecting a water supply and sanitary system for the rural home. The proper selection means not only a saving from a financial standpoint, but, in the long run, from the standpoint of health as well. With much thought, the water and sanitary system can be made a safety factor and asset to any home; without careful consideration, the system will turn into the greatest of all hazards.

Specifications covering each of the drawings contained in this pamphlet will be supplied upon request by writing to the District Engineer's Office, Farm Security Administration, Raleigh, North Carolina. In requesting specifications, reference shall be made to the Plate No. given on each particular drawing.

J. Royal Kornegay
Acting District Engineer

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PART I - WATER SUPPLY

SPRINGS

GENERAL Springs may be of either two classes: (1) The sandy spring, and (2) The rock spring. The former is the result of the water table of saturated sand reaching the surface, while the latter is the result of the seepage of water arising from between two strata of rock near the surface. In determining the acceptability of a sandy spring, the surrounding areas should be examined to ascertain whether or not any contamination is present. The mere fact that a spring offers water of a plesant taste and which is clear does not necessarily mean that the water is of an acceptable quality. The rock spring, on the other hand is much safer from pollution, and, although the spring originates as a safe supply, it can easily become polluted as it reaches the ground surface. Because of this, when considering the spring as a source for domestic supply, an enclosure of the type shown on "Plate WS-S-1" should be constructed. This type of casing offers a very effective method of excluding surface contamination and the preventing of access to the source itself by humans and animals. The spring, if not cased in, can become polluted from one of several ways: (1) By the drainage of surface water into the spring from a nearby hillside; (2) By dipping out of the spring with buckets and other household utensils; (3) By livestock drinking from the spring, and (4) By the filtering into the spring beneath ground surface of a seepage from a nearby cesspool, privy, or disposal field.

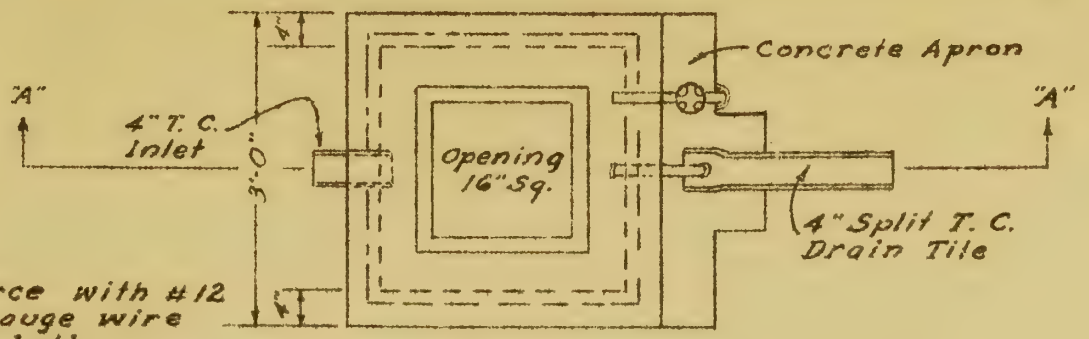
Before construction of the actual enclosure about the spring, the first step should be to locate the true spring by sufficiently excavating. After this is located, actual construction can begin. Care should always be taken to see that the flow of water into the encasement is free and unrestricted, and that the outlet is located well above a natural ground elevation. However, in no instance should an attempt be made to raise the water level in the enclosure higher than the normal level of the spring. To do so will cause the spring to break out farther down the hill.

In the construction of an enclosure, care should always be taken to see that the outlet pipe is either bent or equipped

with an elbow for the purpose of preventing the injection of anything into the spring. Further, the encasement should be provided with a drain pipe for cleaning the spring periodically.

If cattle have access to the area surrounding the spring, the area should be fenced off, for, even though the spring is encased, pollution will gradually seep into the ground and thence into the veins feeding the spring.

STERILIZATION OF SPRINGS It is quite likely that during the construction of the spring, contamination will occur, and before the spring is put in operation, it should be sterilized. A very simple method of sterilization is as follows: Add to about four ounces of fresh dry chloride of lime (chlorinated lime) five gallons of water and stir thoroughly. Pour the solution into the spring and allow to stand for a short time before flowing off. Note: A moderately heaping table spoonful of chlorinated lime is approximately one ounce. Aside from the above, there are several other chemicals of equal value which can be used. Two of these are HTH and Perchloron. When these preparations are used, enough dry powder should be used to give 50 parts per million solution, and sprinkled directly into the spring.



PLAN

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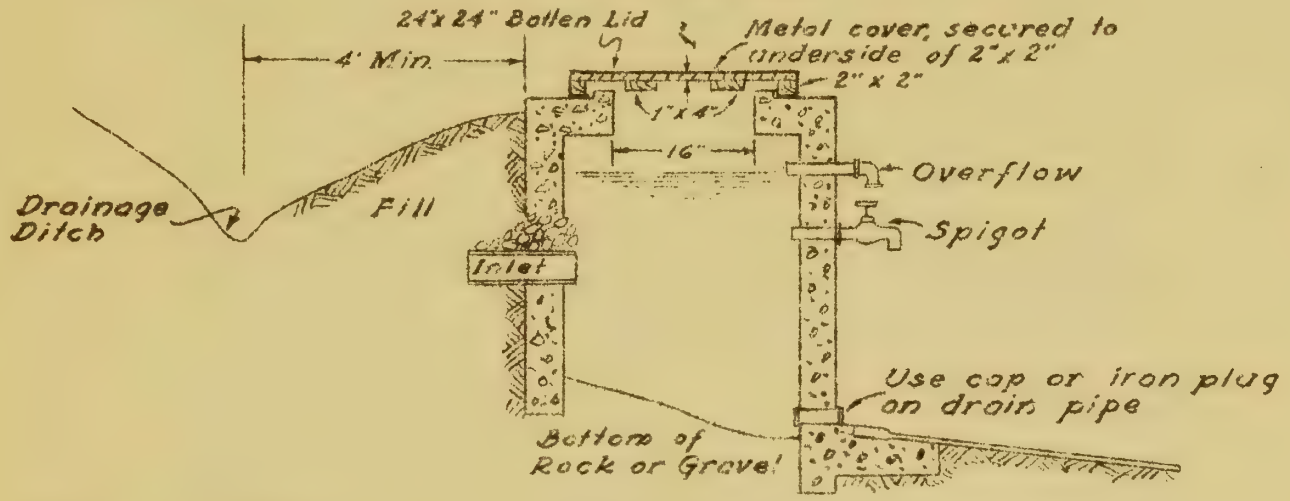
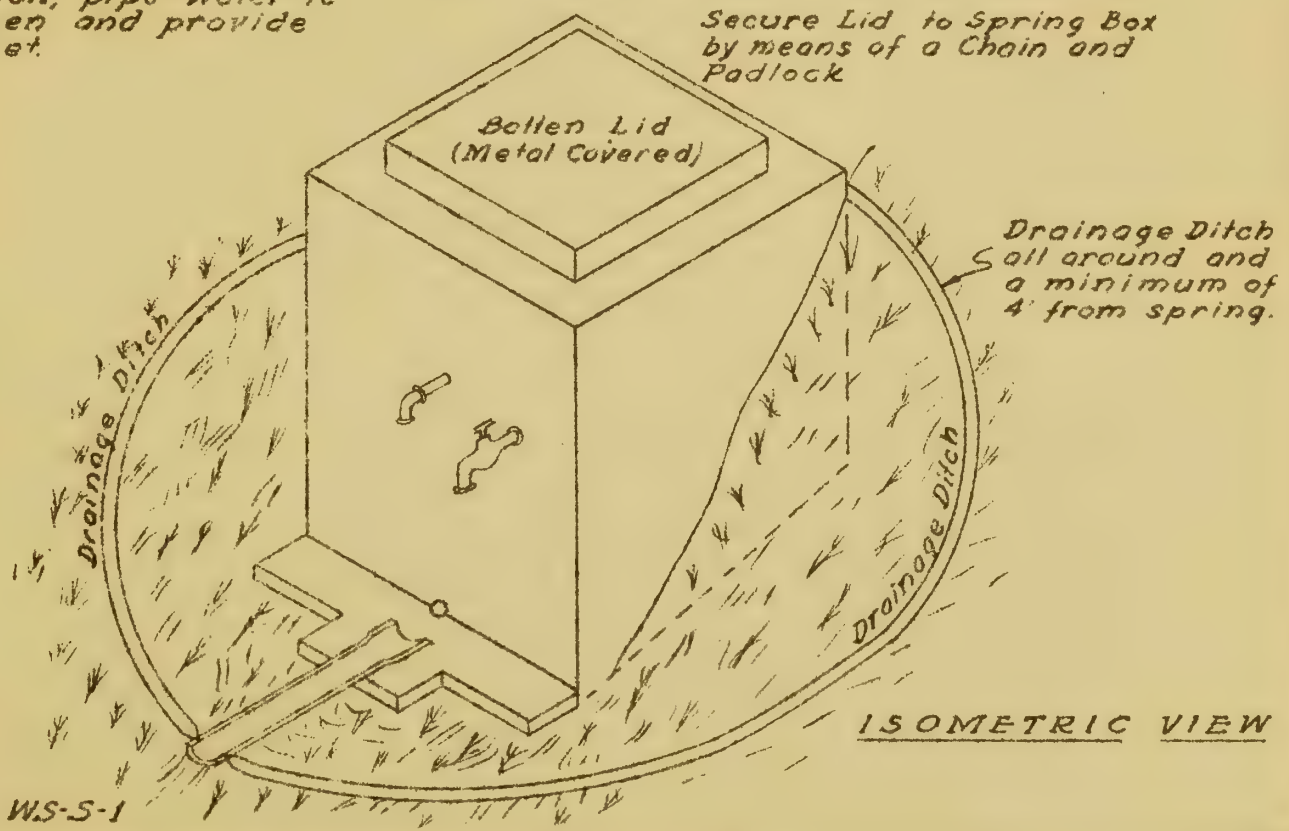


SECTION "A"-"A"

NOTE: If spring is located at sufficient elevation, pipe water to kitchen and provide faucet.



ISOMETRIC VIEW

PLATE WS-S-1

CONCRETE SPRING BOX

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DISTRICT I REGION IV RALEIGH, N. C.

DUG WELLS

LOCATION Dug wells can, as a rule, be classed as shallow wells, since they usually receive their water from a formation lying very near the ground surface, above which there is a very little, if any, non-pervious stratum superimposed.

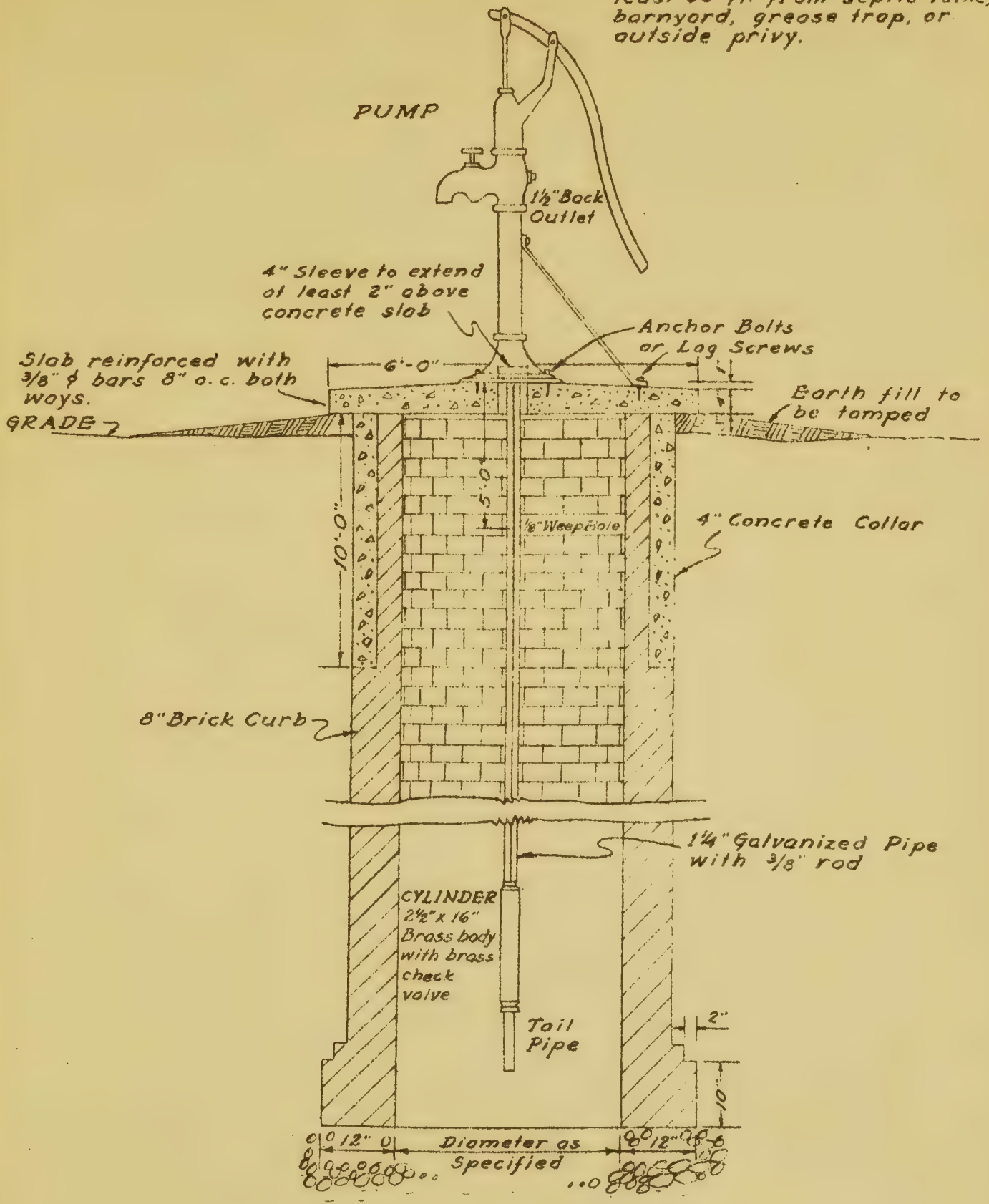
Wells of this type, since their source is of a very shallow origin, require much consideration in locating them. Their location with respect to nearby privies, sewage lines, or cesspools should be safely established. The exact location, however, will vary in each individual case, depending upon the direction of flow of the underground water, and the determination as to how porous the soil in the vicinity is. The polluting element will travel much farther in a sandy, porous soil than in a clay soil. But, at any rate, the well should be located up hill from any surrounding source of pollution, and a minimum of 50 feet from the nearest source.

CONSTRUCTION In constructing a dug well, from a health standpoint, the first requirement is the construction of a water-tight casing (or curbing) extending down a safe distance of not less than 10 feet into the ground. This casing may be either brick or terra cotta pipe. A very effective type of brick curbed well which serves to exclude surface contamination as well as below surface pollution is shown on "Plate WS-DW-1", while an equally effective type of terra cotta well is illustrated by "Plate WS-DW-2". In constructing the brick curbed well, the use of a 4" ring of brick reinforced with about 4" of cement mortar or small aggregate concrete placed between the brick and earth wall for a minimum depth ten feet will act as an effective seal. Similarly, in the construction of a T. C. well, the filling in of the space between the pipe and earth wall to a depth of eight feet is recommended.

In order that the dug well may be made a protected supply, the following should be adhered to: (1) In addition to obtaining a water-tight casing below the surface of ground, extend casing a minimum of 8" above ground, (2) Make cover over well of water-tight concrete, with the surface sloped so as to drain the water away from the well, (3) The opening in the well cover for the drop pipe and pump cylinder should consist of a piece of adequate size iron or steel pipe, securely set in the concrete, with the top of same extending about 2" above surface of slab, and (4) The ground surface around the well should be graded, mounded, and all depressions filled in order to take all run-off away from well.

STERILIZATION OF WELLS Water supplies often become contaminated during the construction of the wells and hence should be sterilized before put into use. Chlorinated lime (calcium hypochlorite) or Perchloron are two very good disinfecting agents. A dosage of at least one part per million of available chlorine is recommended. Inasmuch as the average well will hold not more than 600 gallons of water, a very simple method of disinfecting the well is to take about four tablespoonsful of chlorinated lime and mix with sufficient water to obtain a thick paste or cream. To the paste add about 10 or 15 gallons of water, stir thoroughly and allow to stand until the insoluble material has settled to the bottom of the container. The clear liquid contains the chloride for disinfecting the well. Pour the clear liquid down sides of well and allow to stand for twelve hours. At the end of this time, the water will be safe for use and no objectionable taste or odors will result.

NOTE: Each well to be at least 50 ft. from septic tank, barnyard, greose trap, or outside privy.



SECTION

PLATE WS-DW-1

Not to Scale

TYPICAL BRICK CURBED WELL

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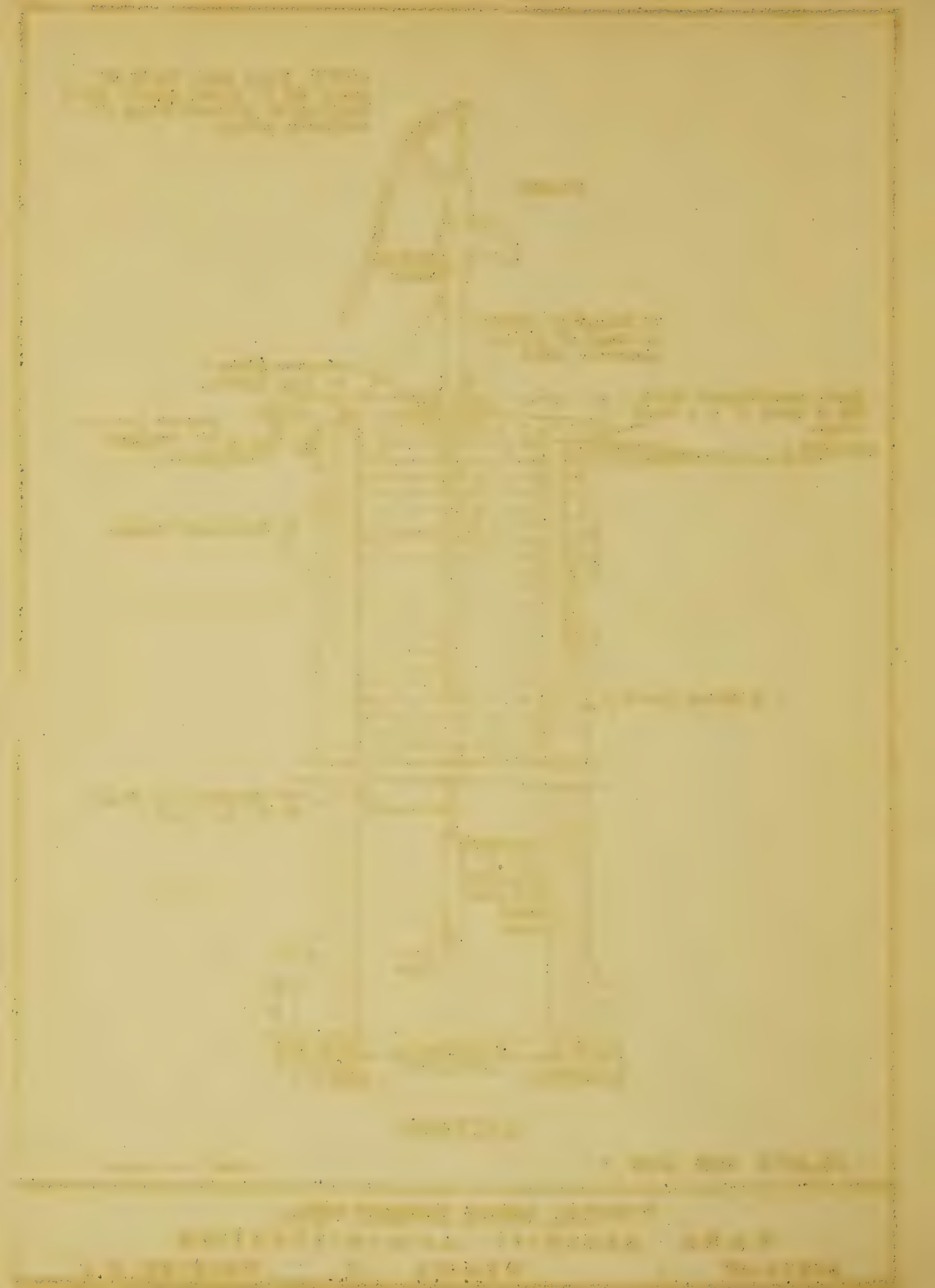

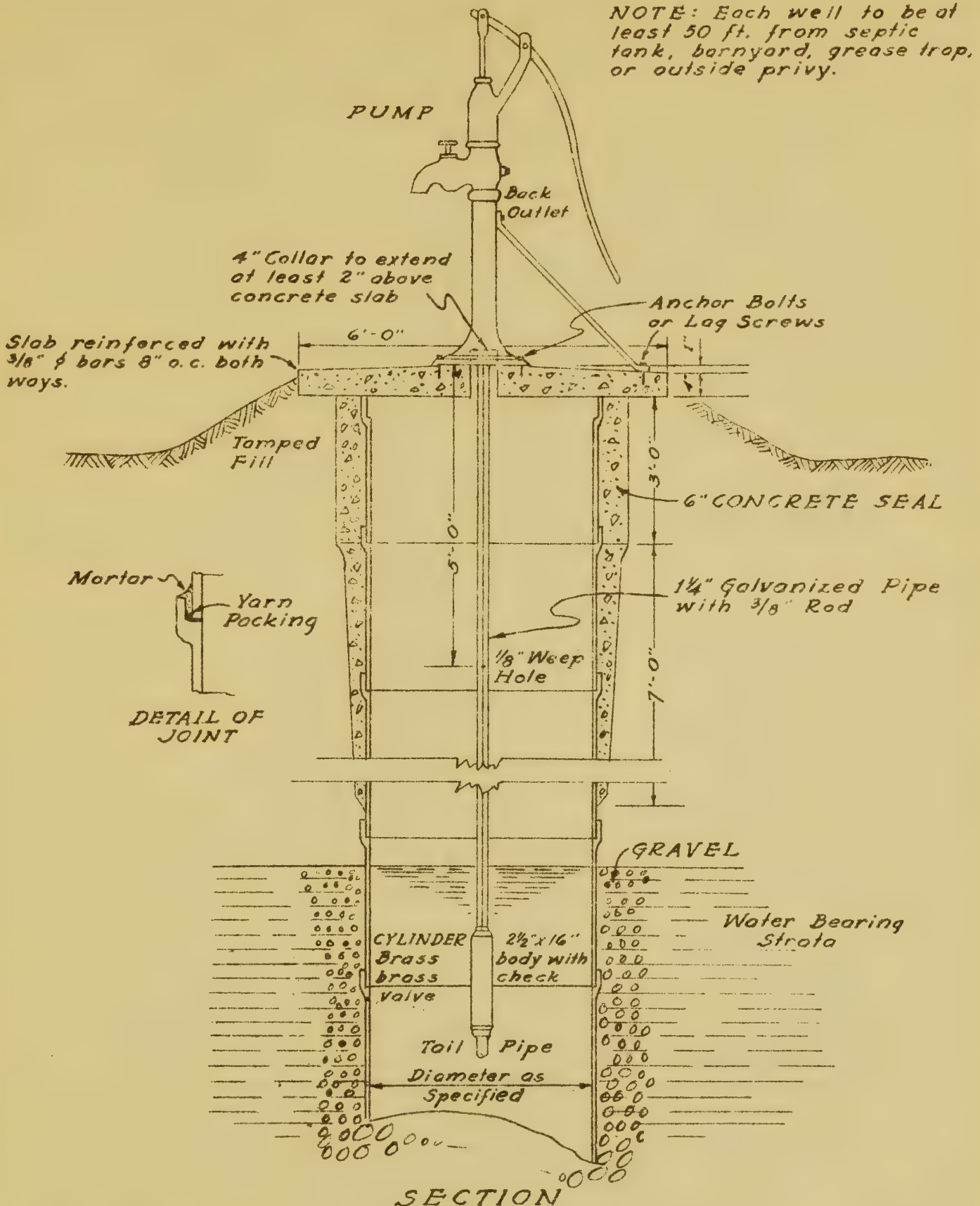

PLATE WS-DW-2

Not to Scale

TYPICAL TILE-PIPE CURBED WELL

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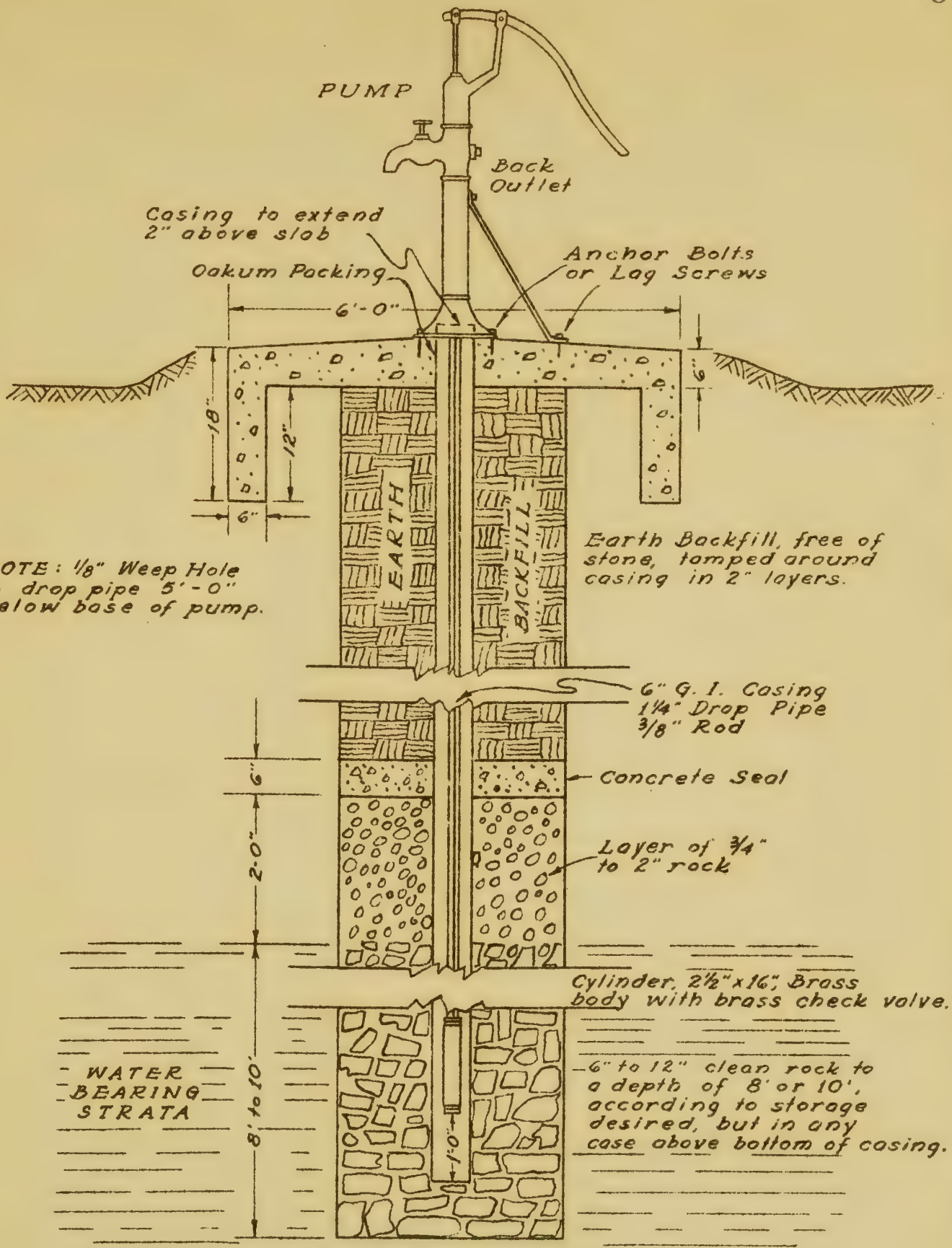
DISTRICT I REGION IV RALEIGH, N. C.



SECTION

PLATE WS-DW-4

RECONSTRUCTED DUG WELL – NO. 1

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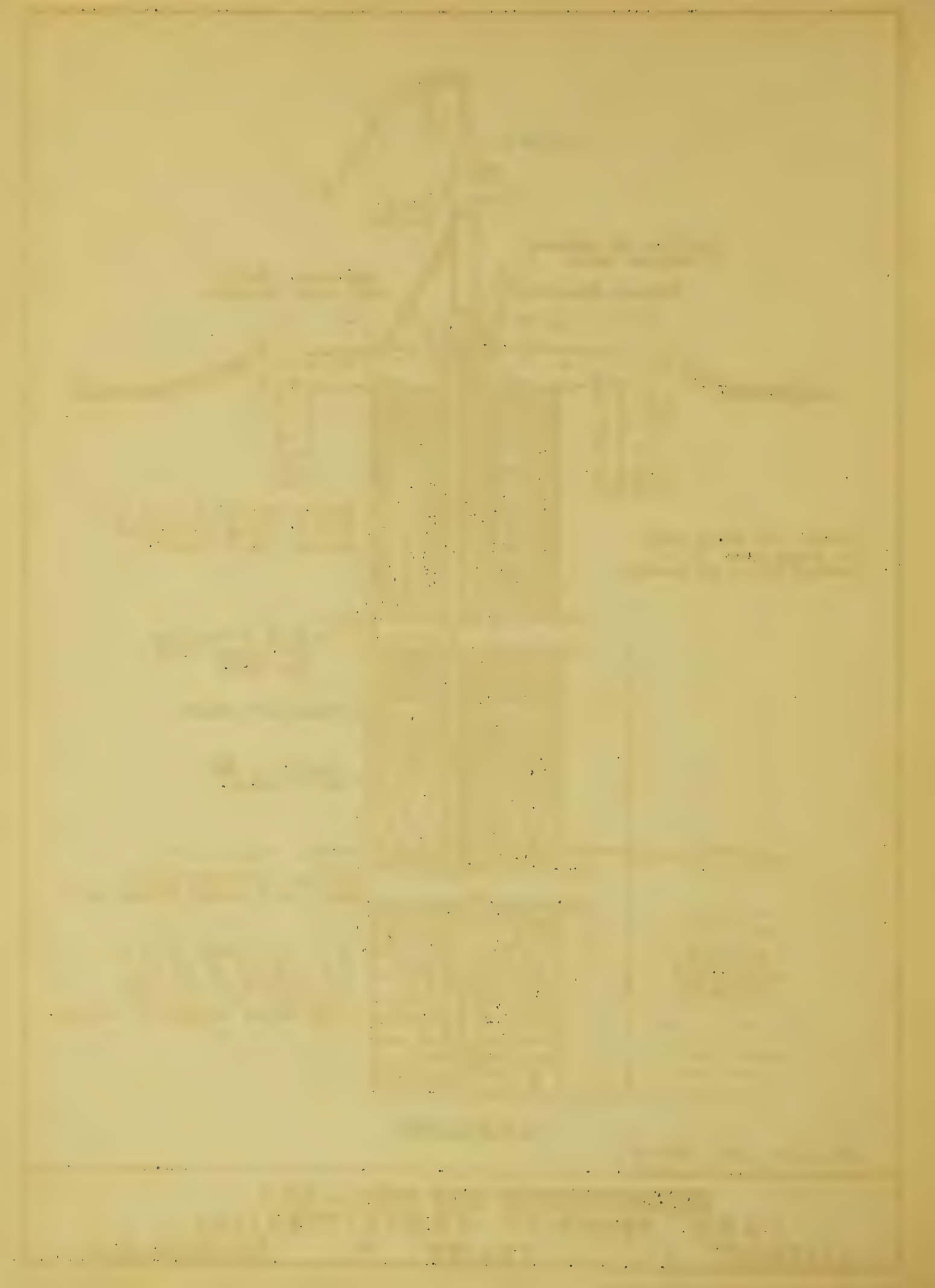

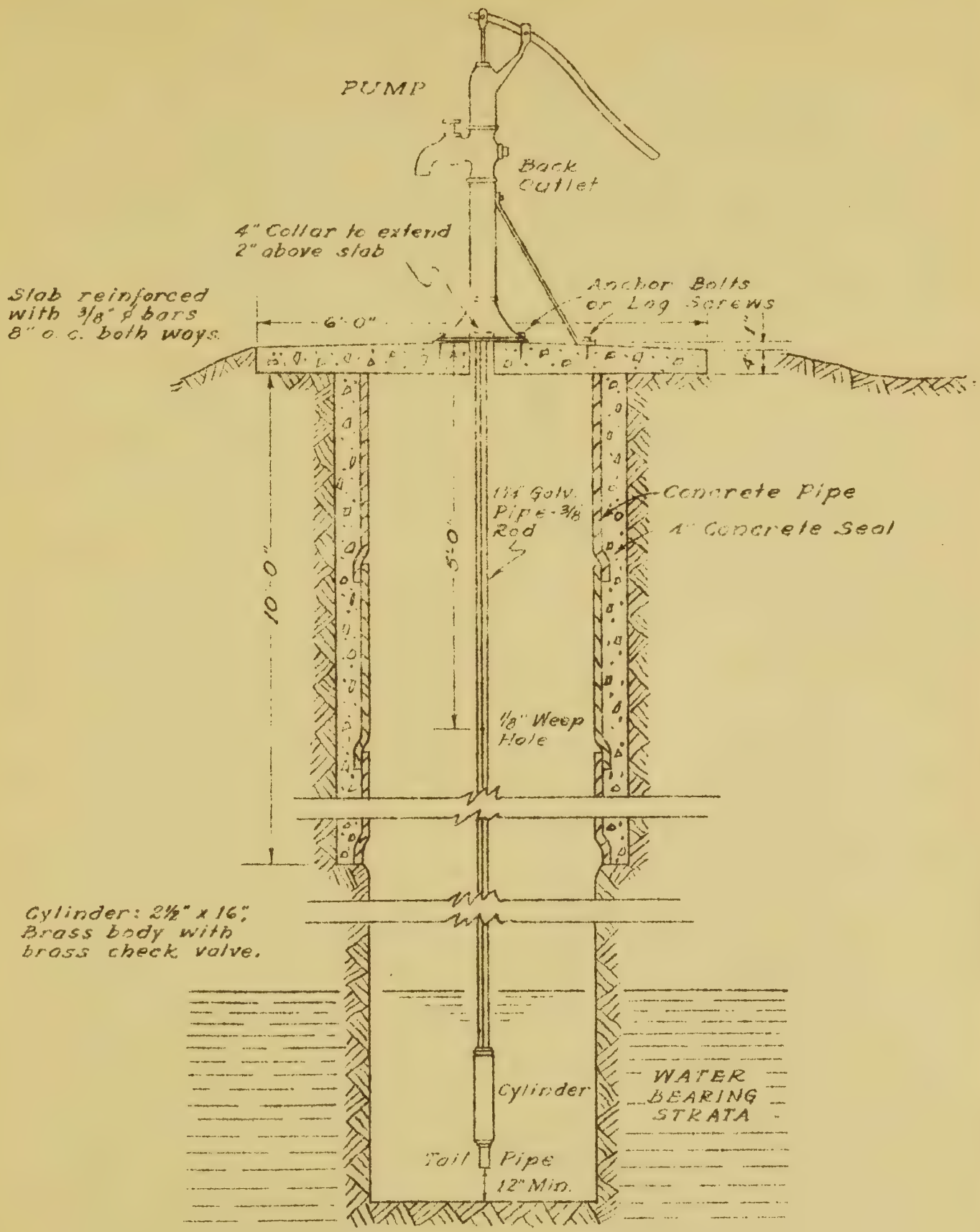

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PLATE WS-DW-3

RECONSTRUCTED DUG WELL - NO. 2

FARM SECURITY ADMINISTRATION

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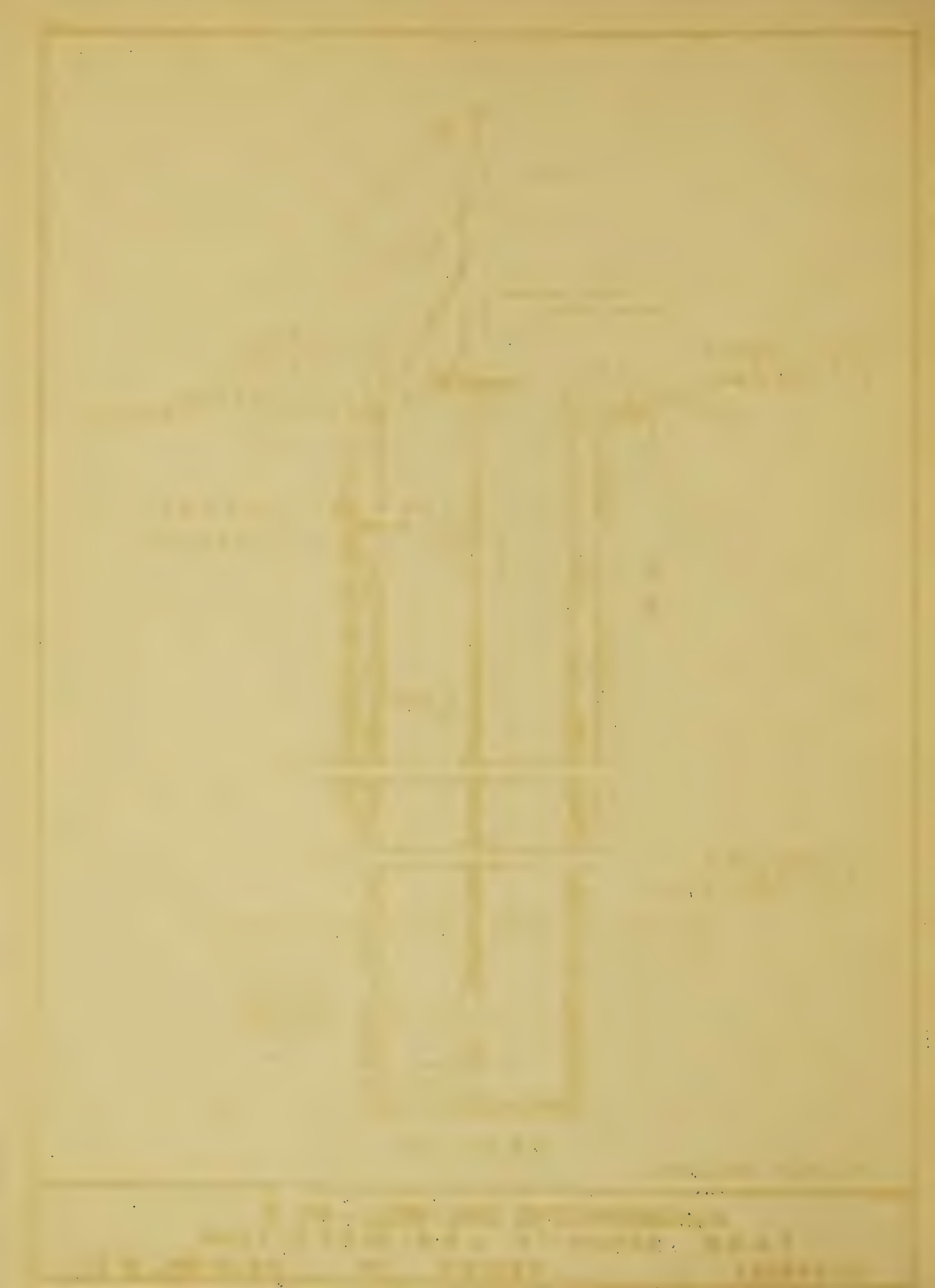


DRILLED WELLS

LOCATION: Drilled well should be employed in locations where great depths are required, and where, as a rule, strata of hard substances are encountered. When it is found possible to obtain water within 30 feet, a 2" to 3" well is sufficient, However, for greater depths, a minimum of 4" is necessary, and when the depth is questionable, it is safest to begin with a large casing which will permit a reduction if necessary.

In limestone regions, deep wells, regardless of depths, can become polluted from sources of pollution located several miles from the well. For this reason, special attention should be given during the construction to see that the casing is made tight. Often, water is unexpectedly reached nearer the surface than contemplated. When such is the case, if coarse gravel, disintegrated rock, or other porous material which permits a rapid flow of water through it, is encountered above the water bearing strata, greater depth should be sought. When the water is obtained from limestone or other porous formation near the surface of the ground, such a supply should not be considered satisfactory, except by frequent sanitary tests.

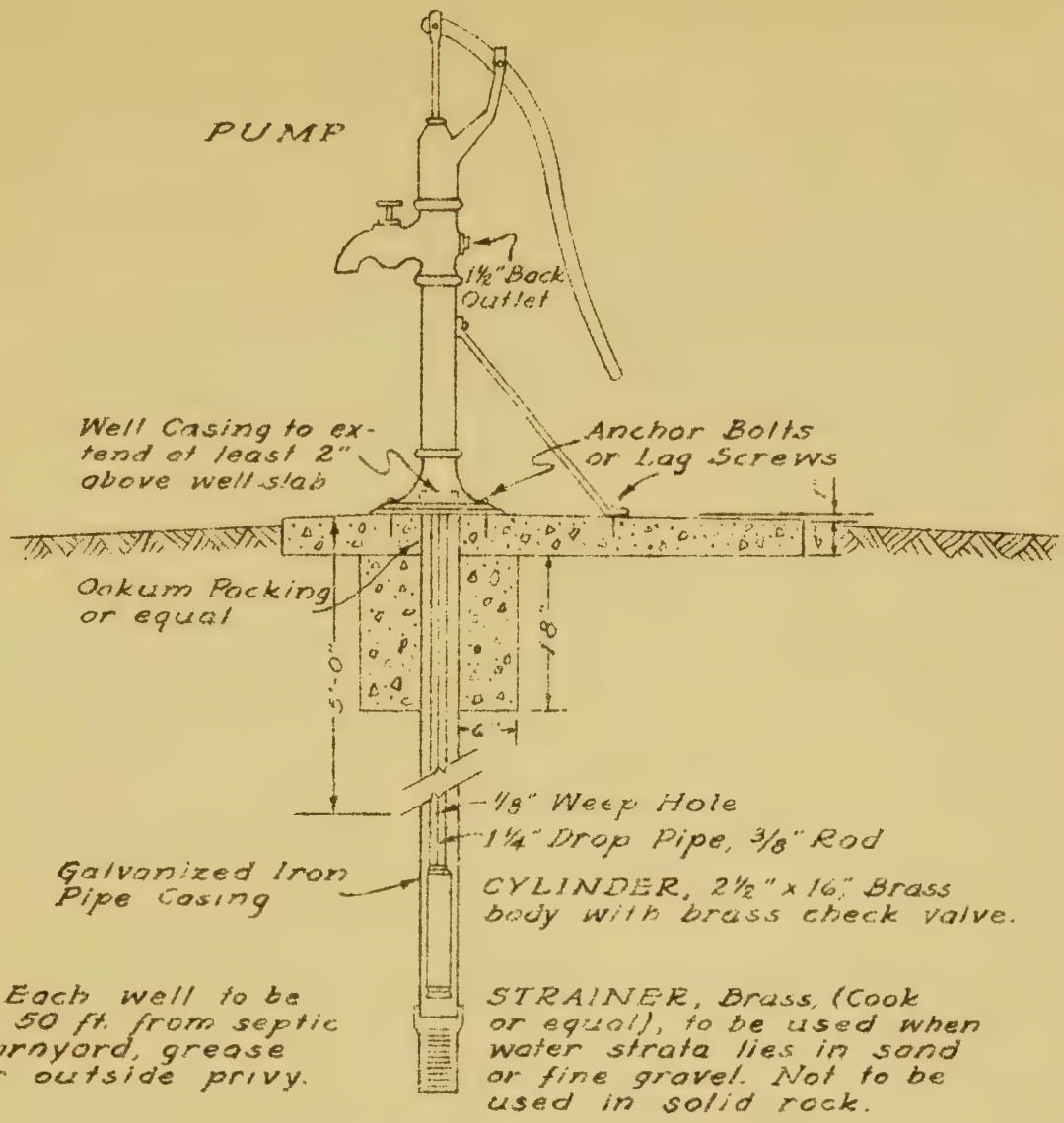
CONSTRUCTION: In the construction of a deep well, the first consideration is to keep surface or other undesired ground water from entering the well. This can be taken care of by projecting the casing down into solid rock, clay, or some other impervious strata, depending upon the country in which the well is located. This seal can be taken care of by (1) driving casing into clay or other sand formation (2) cement grouting, or (3) lead packer. After sealing well, same should be tested by bailing out the drill hole and checking for a period of 48 hours. Where a very porous formation is encountered up to time of sealing, water should be poured into the outer side of the casing. If water enters the casing, the casing should be grouted with puddle clay mortar cement and grout.

When well is located in sand or similar stratum, a strainer of sufficient length should be provided. A minimum length of 2'-6" should always be required for this type soil.

In the casing of well, reliable joints should always be affected, Such can be done by sinking a smaller tube inside the outer one and filling the space between it and the outer one with some

form of packing material or grout. In regions where shattered limestone is encountered, the cement grout between the outside of the casing and the earthwall is esential. The concrete itself protects the casing against corrosion and prolongs the life of the well indefinitely. In soft material, it is usually necessary to case the well the entire depth, and a water-tight casing extending to at least 10 feet below the water table should be installed in all cases. All wells should be so drilled that the pump rod and cylinder will hang in a vertical position, assuring proper alignment, and until the water has been passed upon by a recognized health authority, it should not be accepted.

STERILIZATION OF WELLS: For disinfecting wells after construction, a simple method is as follows: Use 5 ounces of chlorinated lime, first mixing it with sufficient water to form a paste. Next add to paste, 8 quarts of water, and after stirring thoroughly, allow insoluble matter to settle in container, leaving a clear liquid at top. Mix this clear liquid with about 5 gallons of water and pour into well. Follow with the pouring of about 10 gallons of clear water into the well and allow to stand for about 24 hours, and then pump well until no chlorine is present in the water. An alternate method of sterilization is the sprinkling of HTH or Perchloron powder into the well and working same down, then pumping the well, after allowing same to stand for 24 hours until no chlorine is present.



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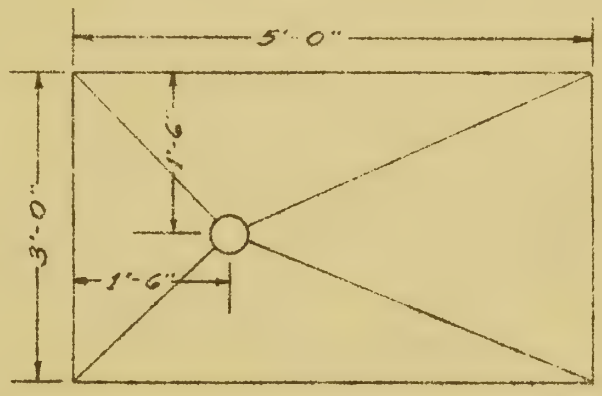


PLAN OF WELL SLAB

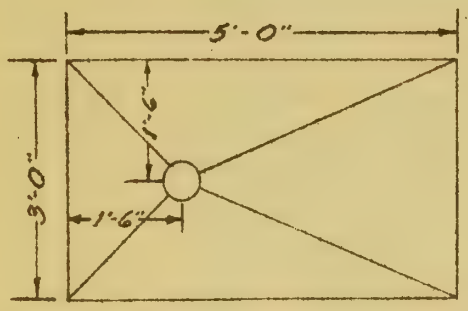
PLATE WS-W-1

TYPICAL DEEP WELL PUMP

FARM SECURITY ADMINISTRATION

DISTRICT 1 REGION IV RALEIGH, N.C.

NOTE: The storage tank shown hereon may be substituted for with a cylindrical galv. tank of 40 gal. min. (Myers Fig. No. 2933. or equal), or a sterilized wooden barrel.



PLAN OF WELL SLAB

NOTE: Each well to be at least 50 ft. from septic tank, barnyard, grease trap, or outside privy.

PLATE WS-W-3

ATTIC STORAGE TANK

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DISTRICT I REGION IV RALEIGH, N. C.

DRIVEN WELLS

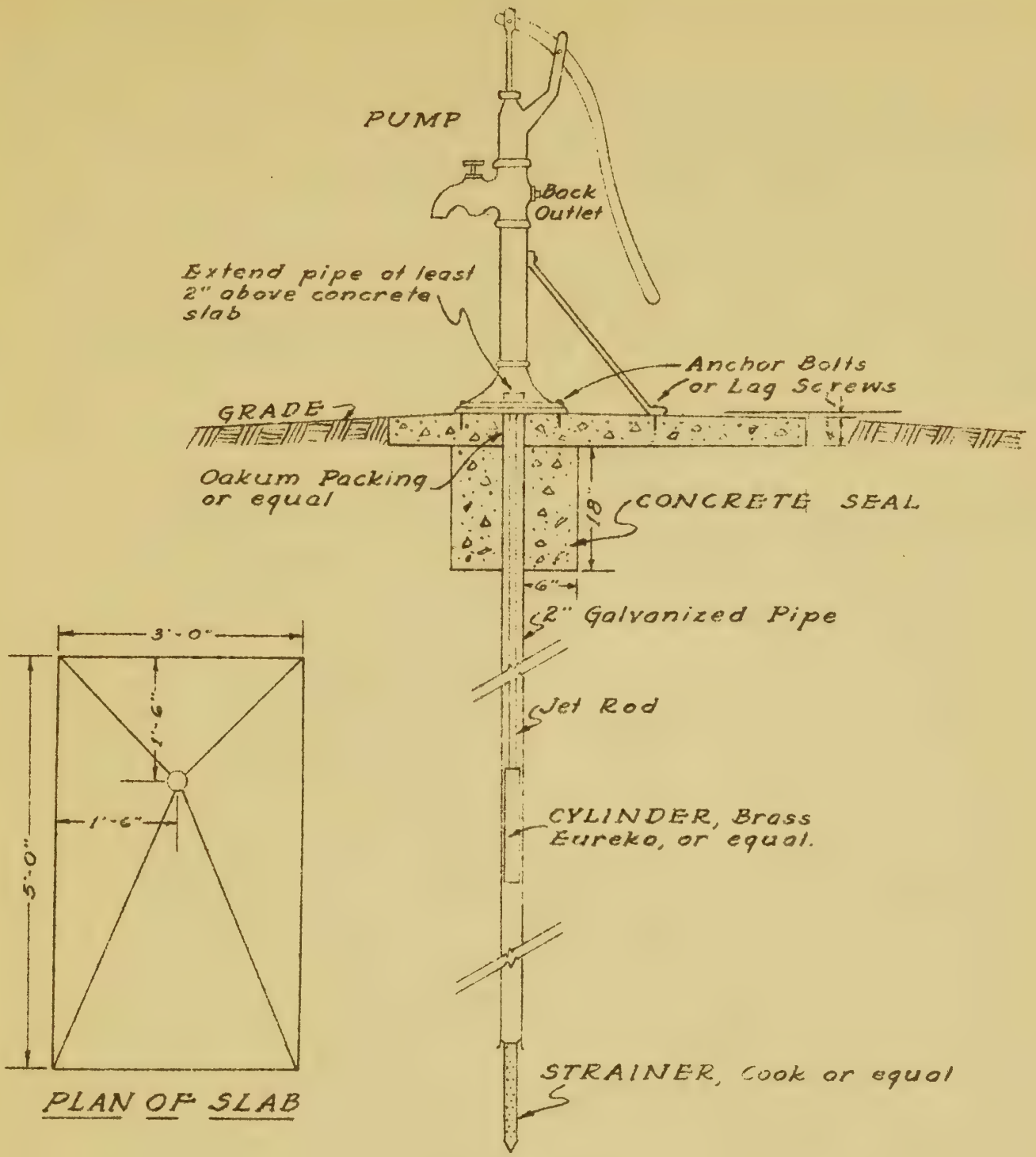
LOCATION Driven wells, from the standpoint of the water strata, are very similar to Dug Wells, and are recommended in locations where water can be obtained relatively near the surface. However, due to the relatively shallow depth at which water is encountered, the location of the well with respect to nearby sources of pollution, such as privies, cesspools, and the like must bear careful consideration. Similarly, as the polluting element travels much farther in sandy, porous soil, and as most shallow wells are in this type soil, the wells should, if possible, be located up hill from such sources. Driven wells have one distinct advantage over deep wells, and this advantage is of such magnitude that, after studying the factors relating to the sources of contamination, if a shallow well can be employed, same should be done. This advantage is that the shallow well pump can be employed, thereby eliminating the need of placing the pump directly over the well and making it possible to place same over the kitchen sink. This arrangement is possible provided the suction lift does not exceed 22 feet.

CONSTRUCTION There are two common methods of sinking the driven wells, namely: (1) the "closed-end" and (2) the "open-end" wells. The closed-end well consists of the well pipe with well point attached, thus giving a closed and pointed end, perforated for three or more feet above, to enter the ground. The tube thus described is driven into the ground by means of a wooden maul or block until it penetrates a water-bearing stratum. The upper end is then connected to a pump and the well complete, except for developing. Where the natural surface is sand, the perforations at the lower end of the pipe are covered with gauze of mesh determined by the fineness of the sand. Often the hand maul may be dispensed with in favor of a block operated by a pile driver or other similar means.

THE OPEN-END WELL is used in hard ground, where depths are required. This kind of well is sunk by removing the material from the interior and at the same time, driving the pipe as described above. The use of the water jet is the most common method employed in this case. The outstanding objection to the use of the jet is, however, the introduction of contamination in the well, unless

water of an approved quality is used for jetting purposes. Often a steel cutting edge or cutting shoe is employed for expediting the work where materials of a hard nature are encountered. Frequently in this type of construction, the solid pipe is sunk, with strainer inserted, with tube being then withdrawn nearly to the top of the strainer and sealing.

STERILIZATION OF WELLS The method of sterilizing driven wells is similar to that given for sterilizing drilled wells and discussed hereinbefore.



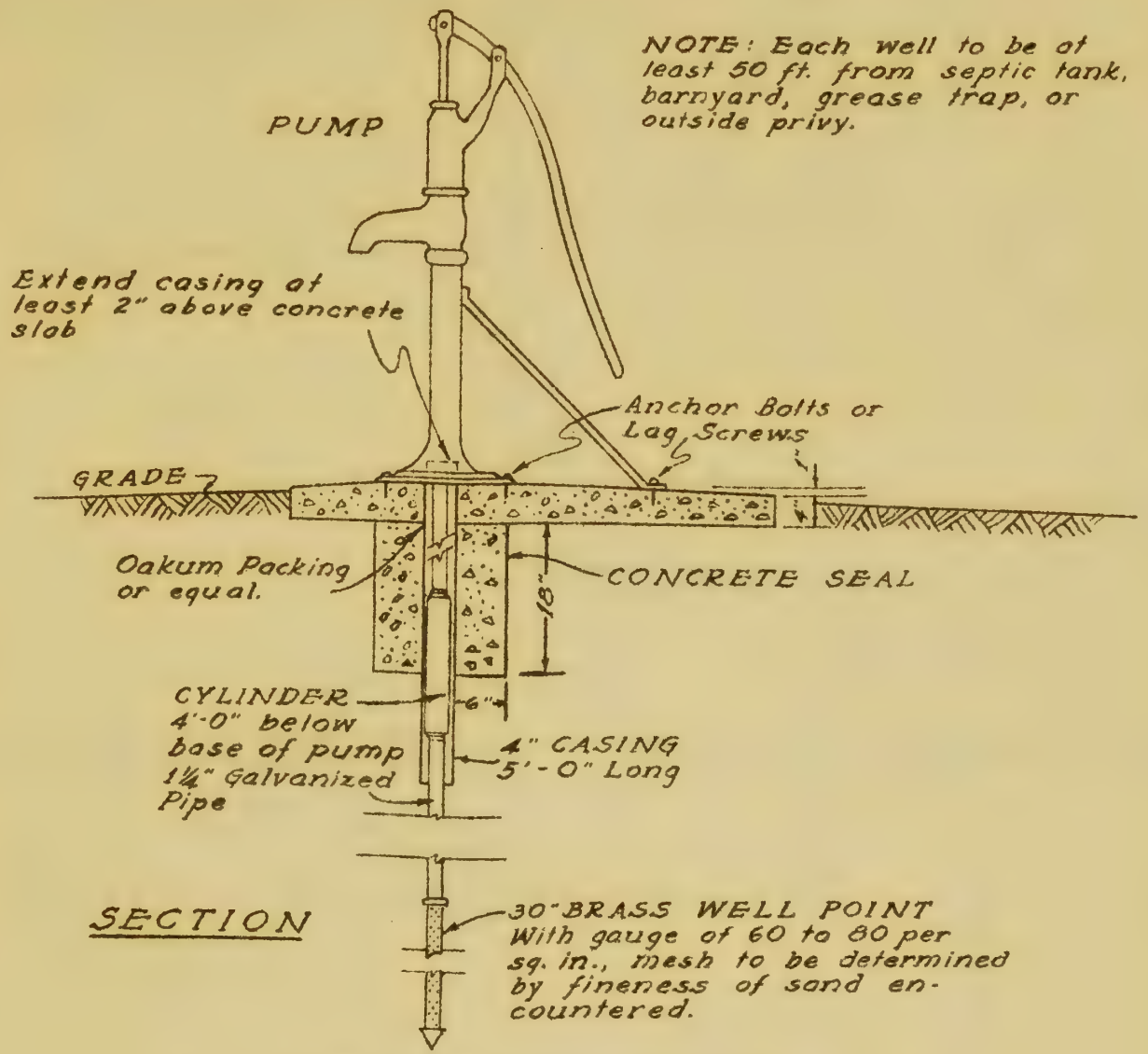
NOTE: Each well to be at least 50 ft. from septic tank, barnyard, grease trap, or outside privy.

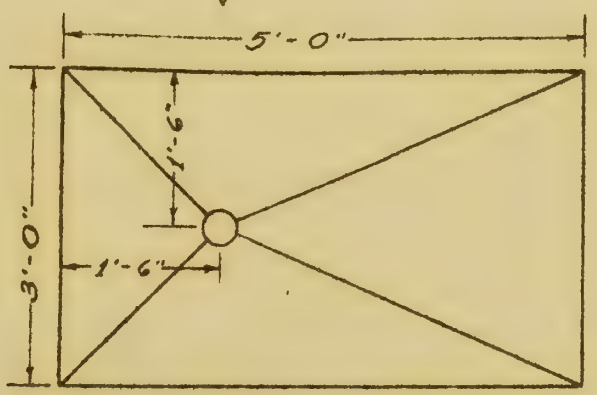
PLATE WS-W-2

TWO-INCH DRIVEN WELL

FARM SECURITY ADMINISTRATION

DISTRICT I REGION IV RALEIGH, N. C.

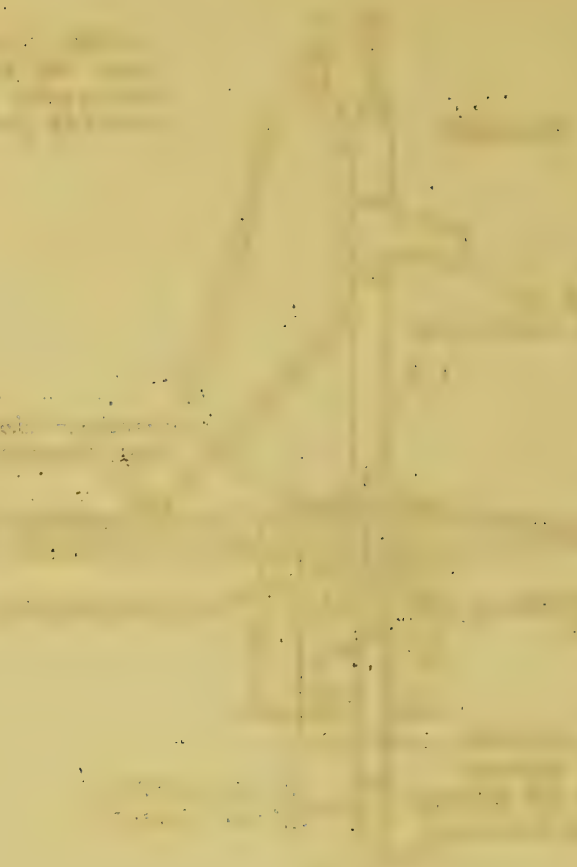


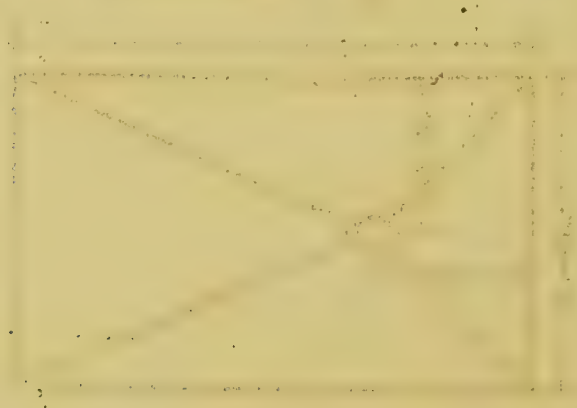


PLAN OF WELL SLAB

PLATE WS-W-4

TYPICAL SHALLOW WELL PUMP
FARM SECURITY ADMINISTRATION
DISTRICT I REGION IV RALEIGH, N.C.





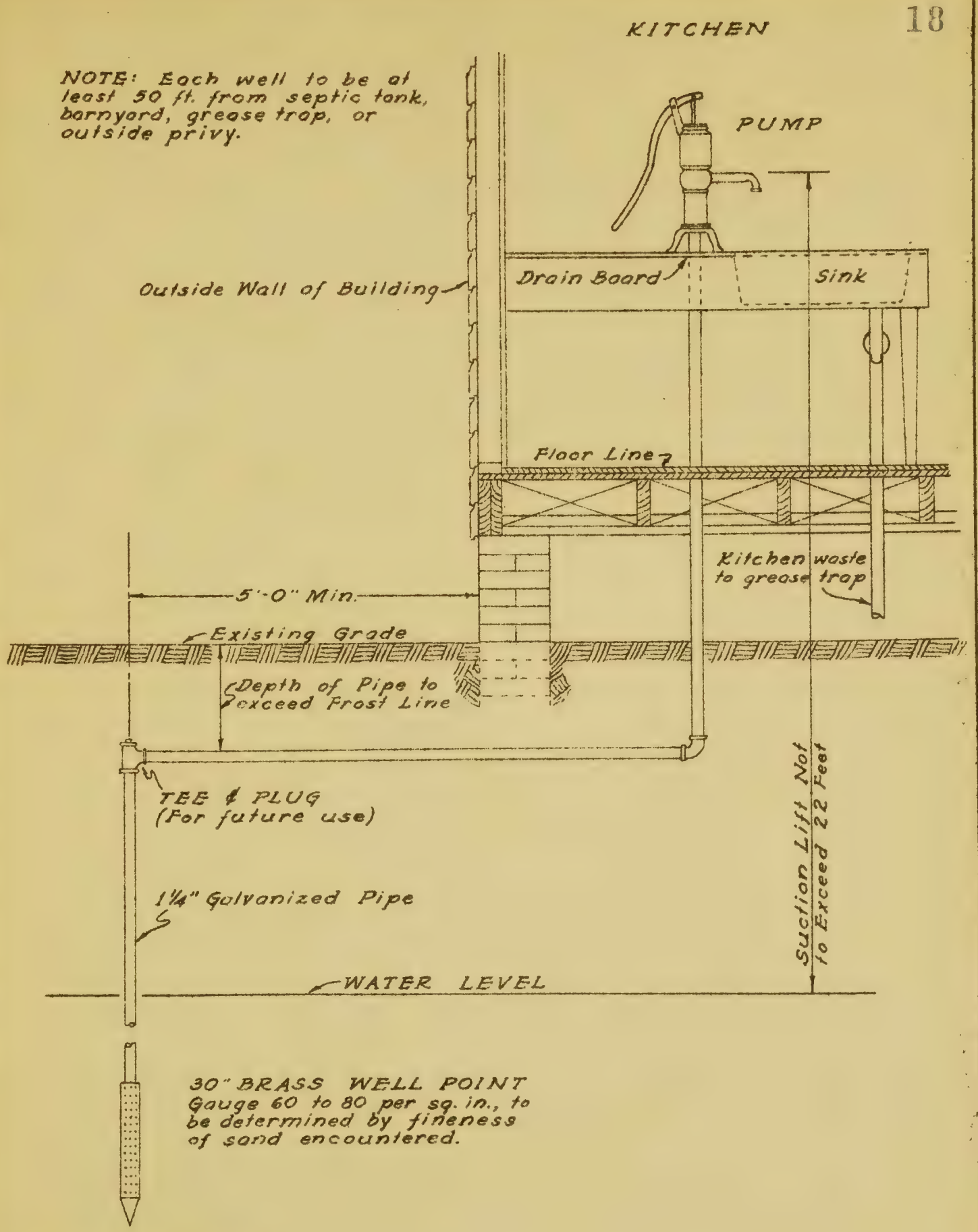


PLATE WS-W-5

SHALLOW WELL PUMP IN HOUSE

FARM SECURITY ADMINISTRATION

DISTRICT I REGION IV RALEIGH, N. C.

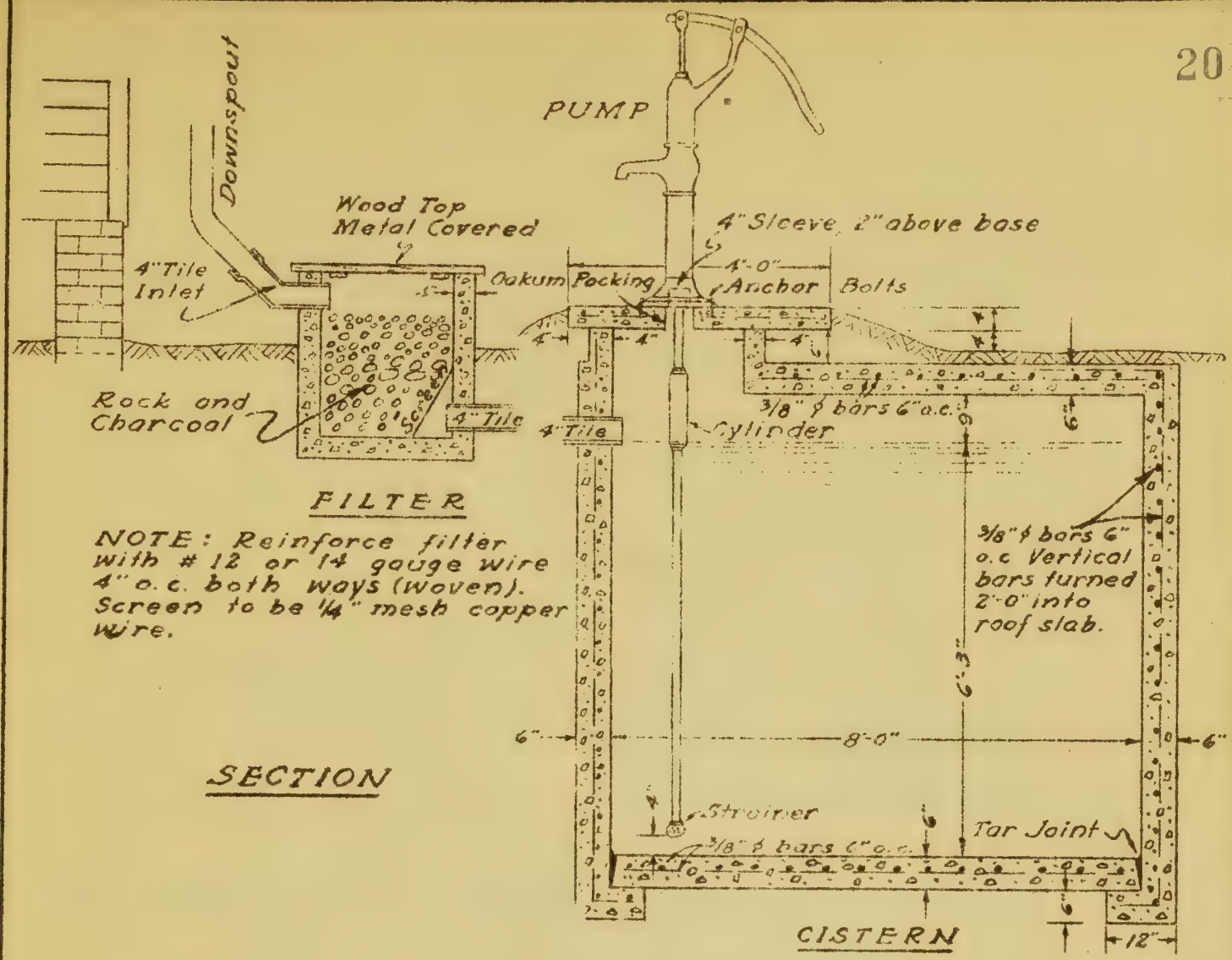
CISTERNS

LOCATION In some sections where underground water is not readily obtainable or the supply is impure, cisterns are used extensively to store water for household consumption. Cisterns, are not a desirable means of obtaining a supply of water unless properly constructed, because of the several ways in which they invite pollution. However, a properly constructed cistern of sufficient size may provide an ever-abundant supply of water. Since rain water accumulates some impurities as it passes through the air and over roofs, a filter of charcoal and gravel, through which all water entering the cistern must pass, should always be used as an important sanitary feature. Cisterns should be confined to metal or slate roofs, as composition roofs will impart a certain amount of tar into the water.

CONSTRUCTION Cisterns can be constructed either of concrete, wood, or plaster, all of which types are illustrated in order on "Plates WS-C-1, WS-C-2, and WS-C-3". Where large cisterns are constructed, they are usually of concrete and placed below the ground. A substitute for such a concrete cistern is shown on "Plate WS-C-3", but is only recommended where a heavy staple soil is encountered, as without such a soil, the value of this cistern is nil. Where an above ground cistern is employed as shown on "Plate 2" care must be taken to see that tank is properly covered and all vents properly screened to prevent flies and other insects from the tank. This type of cistern can also be located at an elevation which will permit water to be supplied to the dwelling under pressure. Regardless of the type cistern employed, the inlet pipe to cistern must contain a special waste control valve. Such a valve (or by-pass) properly supervised, can be operated so that the first portion of each rainfall can be diverted from the cistern, thus eliminating the rainwater carrying most of the dirt and contamination from entering the cistern.

The cistern should always be located so that all surface water will drain away from it, and never where it will be subject to flooding.

STERILIZATION OF CISTERNS The sterilization of the cistern is recommended immediately after construction. The method of sterilization should be the same as that outlined for bug well as discussed hereinbefore.

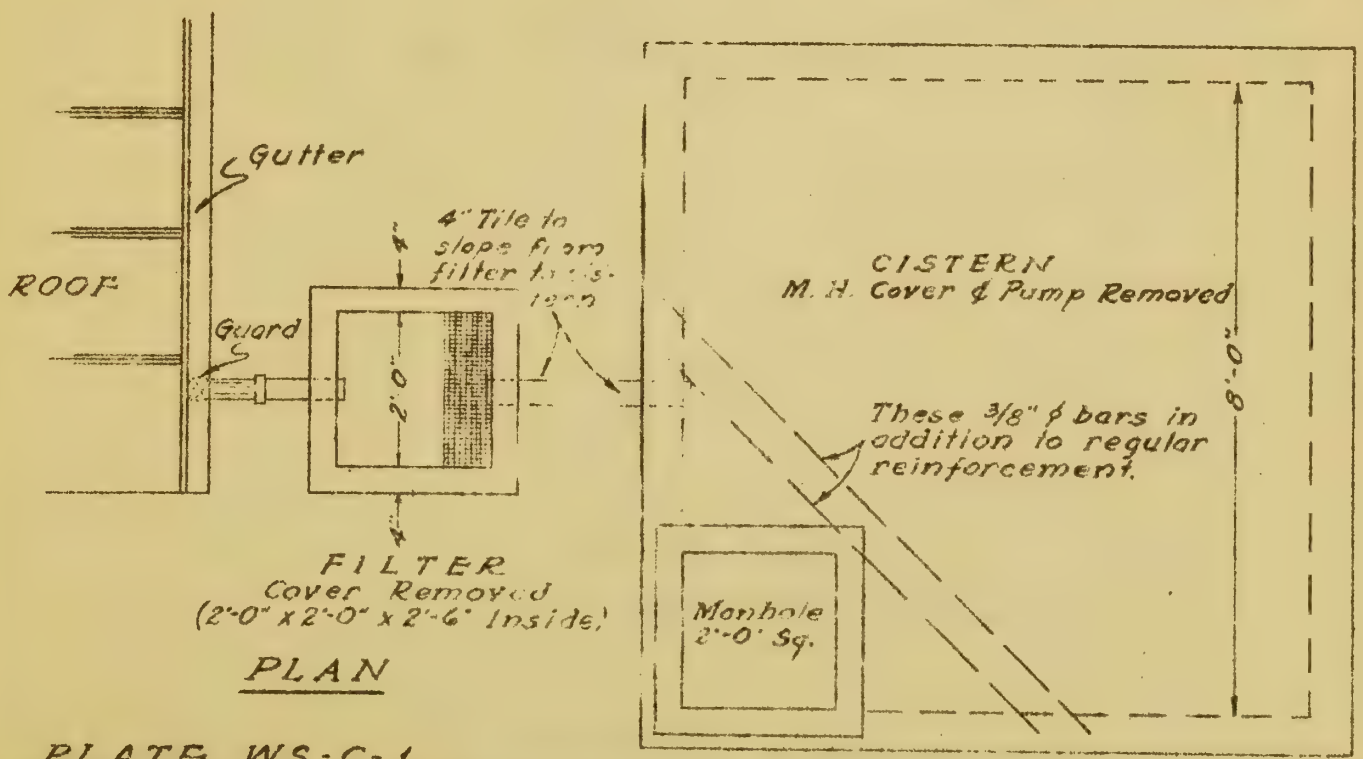


FILTER

NOTE: Reinforce filter with # 12 or 14 gauge wire 4" o.c. both ways (Woven). Screen to be 1/4" mesh copper wire.

SECTION

CISTERN



FILTER
Cover Removed
(2'-0" x 2'-0" x 2'-6" Inside)

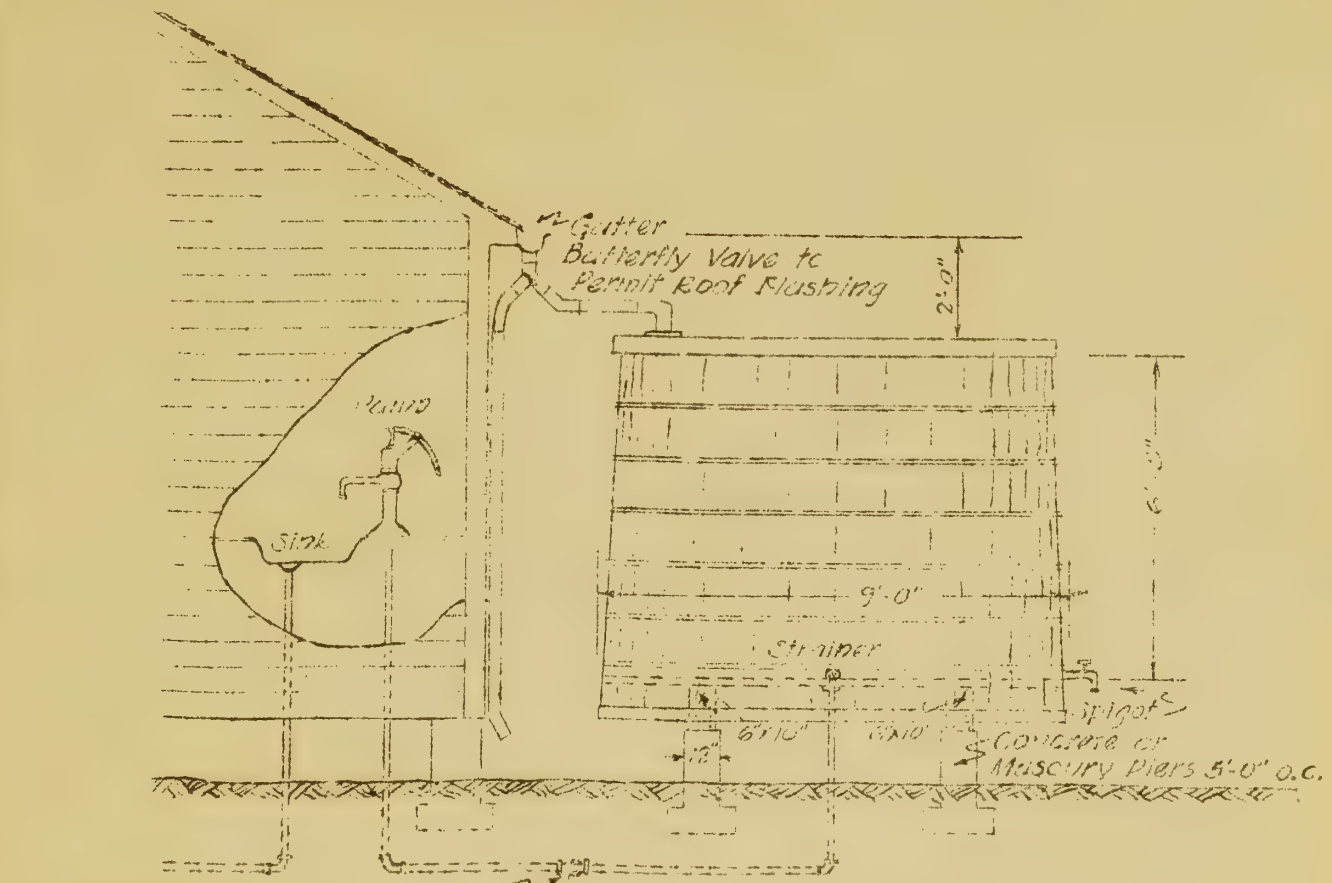
PLAN

PLATE WS-C-1

3000 GAL. CONCRETE CISTERN

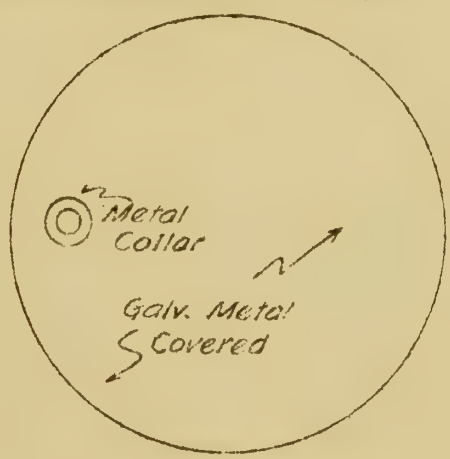
FARM SECURITY ADMINISTRATION

DISTRICT I REGION IV RALEIGH, N. C.

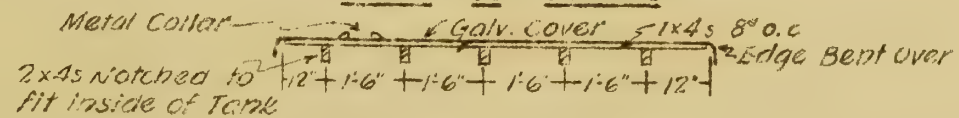


ELEVATION

SHOWING RELATION TO HOUSE



PLAN OF COVER



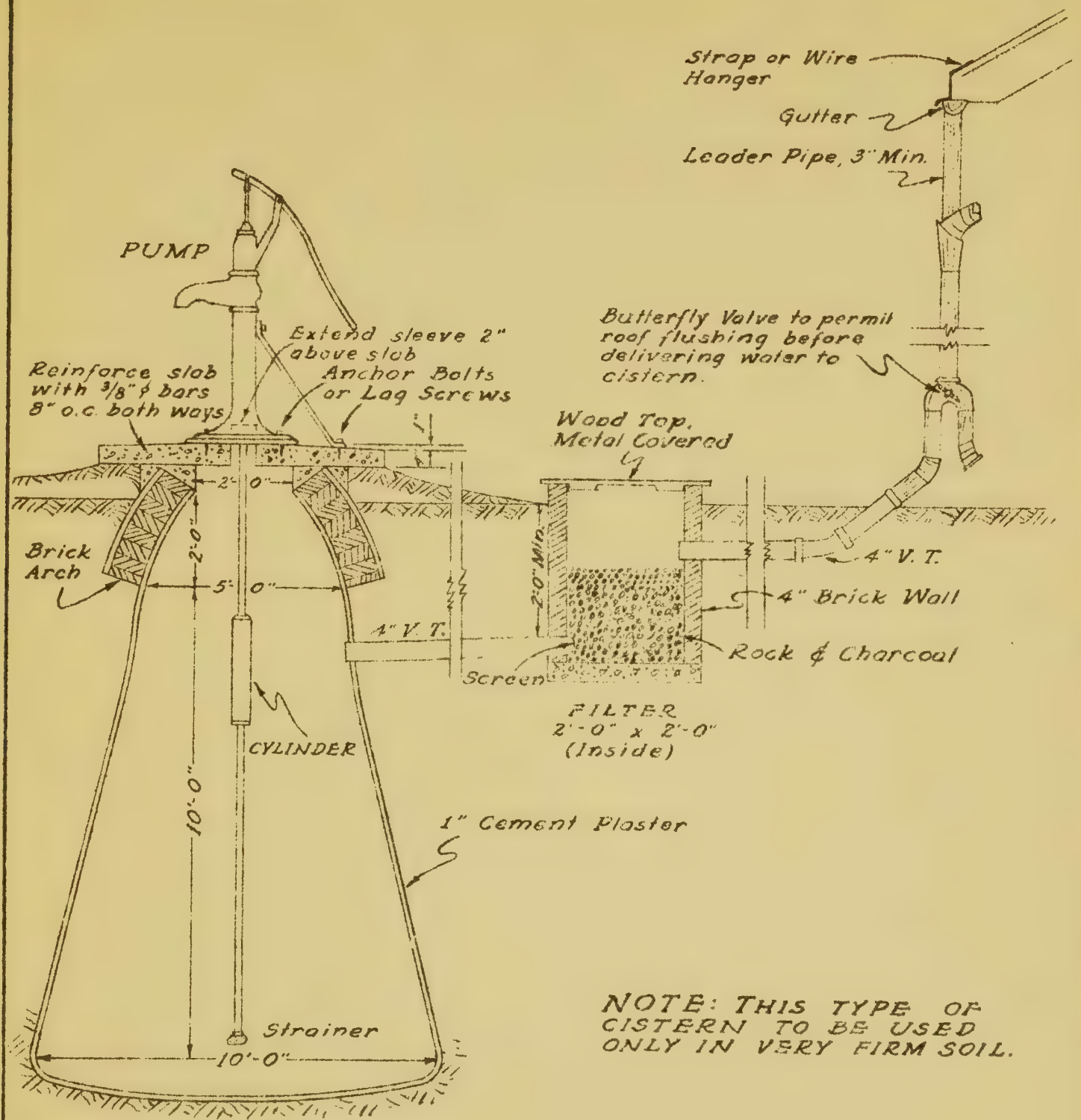
SECTION OF COVER

PLATE WS-C-2

3000 GAL. STAVE TYPE CISTERN

FARM SECURITY ADMINISTRATION

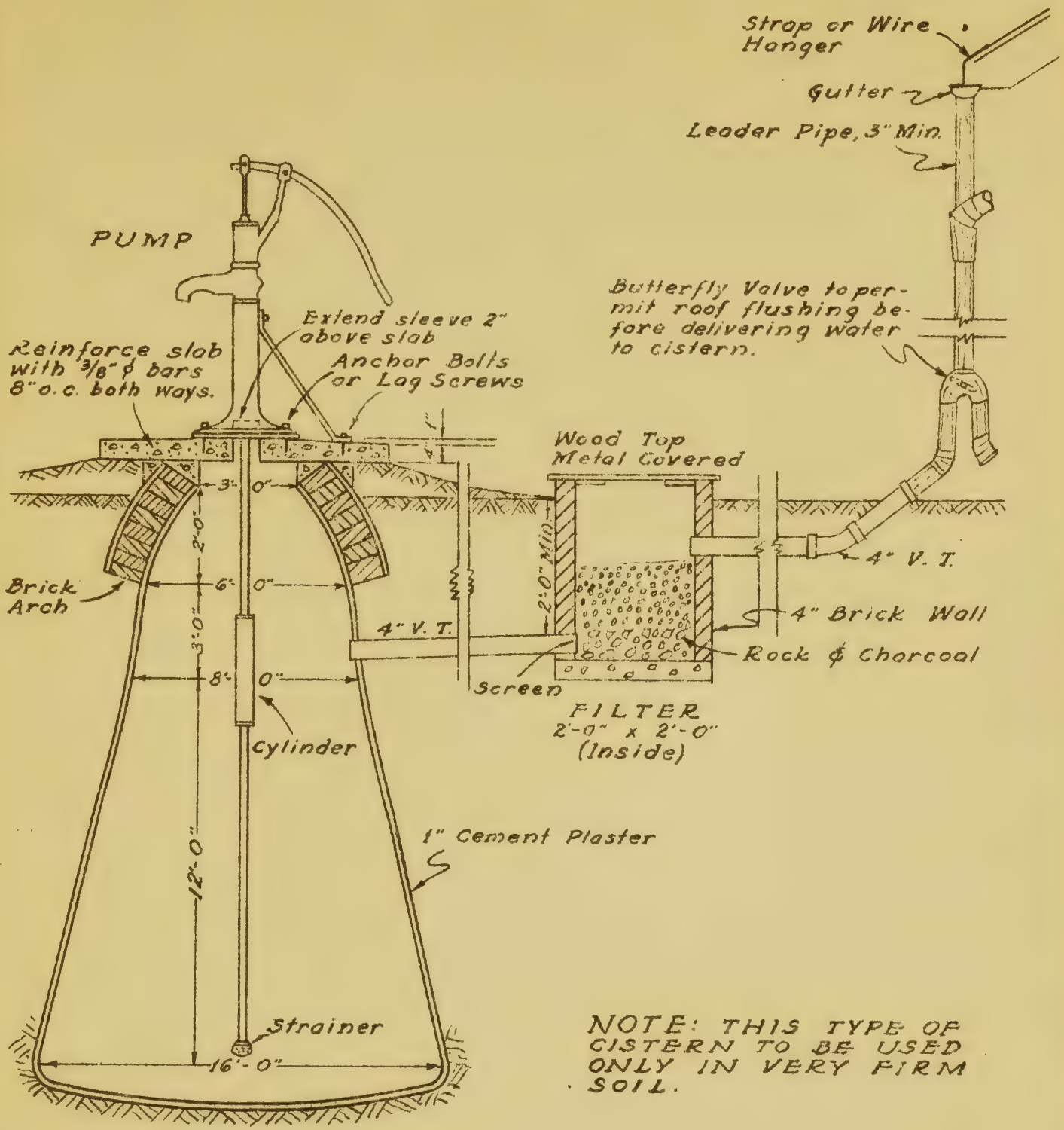
DISTRICT I REGION IV RALEIGH, N. C.



NOTE: THIS TYPE OF CISTERN TO BE USED ONLY IN VERY FIRM SOIL.

PLATE WS-C-3

3000 GAL. PLASTER-LINED CISTERN
FARM SECURITY ADMINISTRATION
DISTRICT I REGION IV RALEIGH, N. C.



NOTE: THIS TYPE OF CISTERN TO BE USED ONLY IN VERY FIRM SOIL.

PLATE WS-C-4

8000 GAL. PLASTER-LINED CISTERN

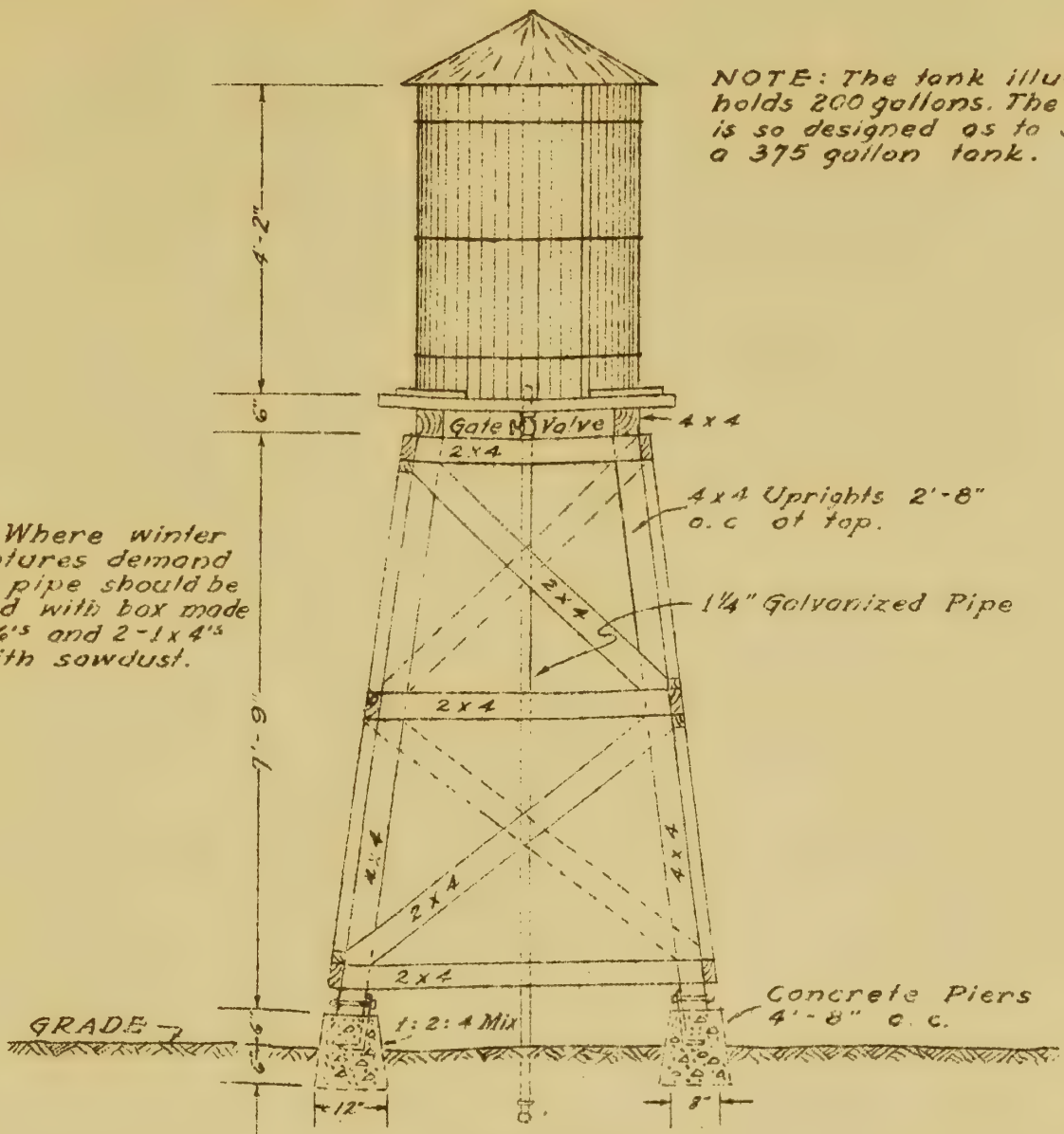
FARM SECURITY ADMINISTRATION

DISTRICT I REGION IV RALEIGH, N. C.

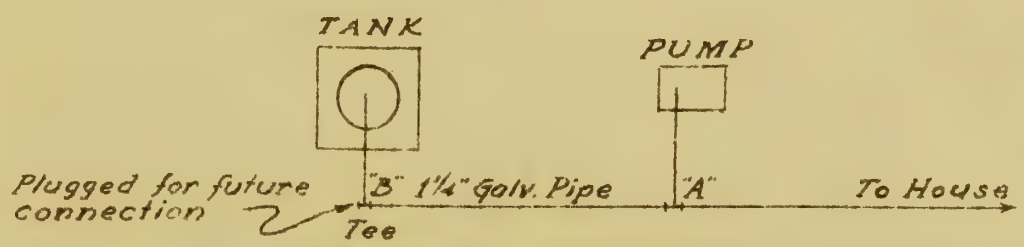
ELEVATED TANKS

GENERAL On many farms a generous supply of water is needed at points other than the house, for stock and poultry, washing, and numerous other uses. In such instances these needs may be conveniently filled with the use of an elevated storage tank.

Shown herein are two types, the one selected to depend upon the quantity of water needed by the particular family in question.



ELEVATION
Scale: 3/8" = 1'-0"



GENERAL ARRANGEMENT PLAN
(Not drawn to scale)

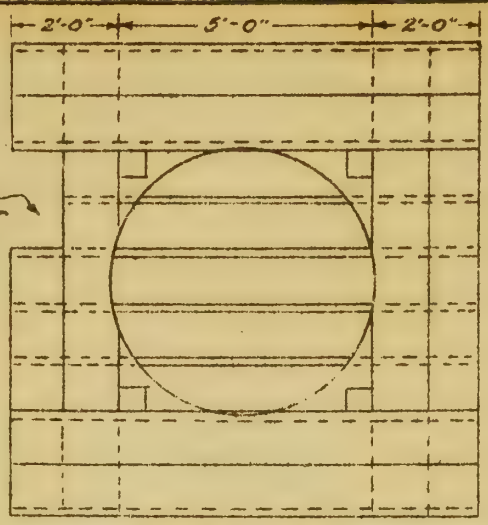
PLATE WS-ET-1

ELEVATED TANK AND TOWER – NO. 1

FARM SECURITY ADMINISTRATION

DISTRICT I REGION IV RALEIGH, N. C.

Note: Where winter temperatures demand it, riser pipe should be insulated with box made of 2 - 1 x 6's and 2 - 1 x 4's filled with sawdust.



VIEW OF TOP

TANK

Anchored to tower with bolted metal angles.

FRONT ELEVATION

SIDE ELEVATION

PLATE WS-ET-2

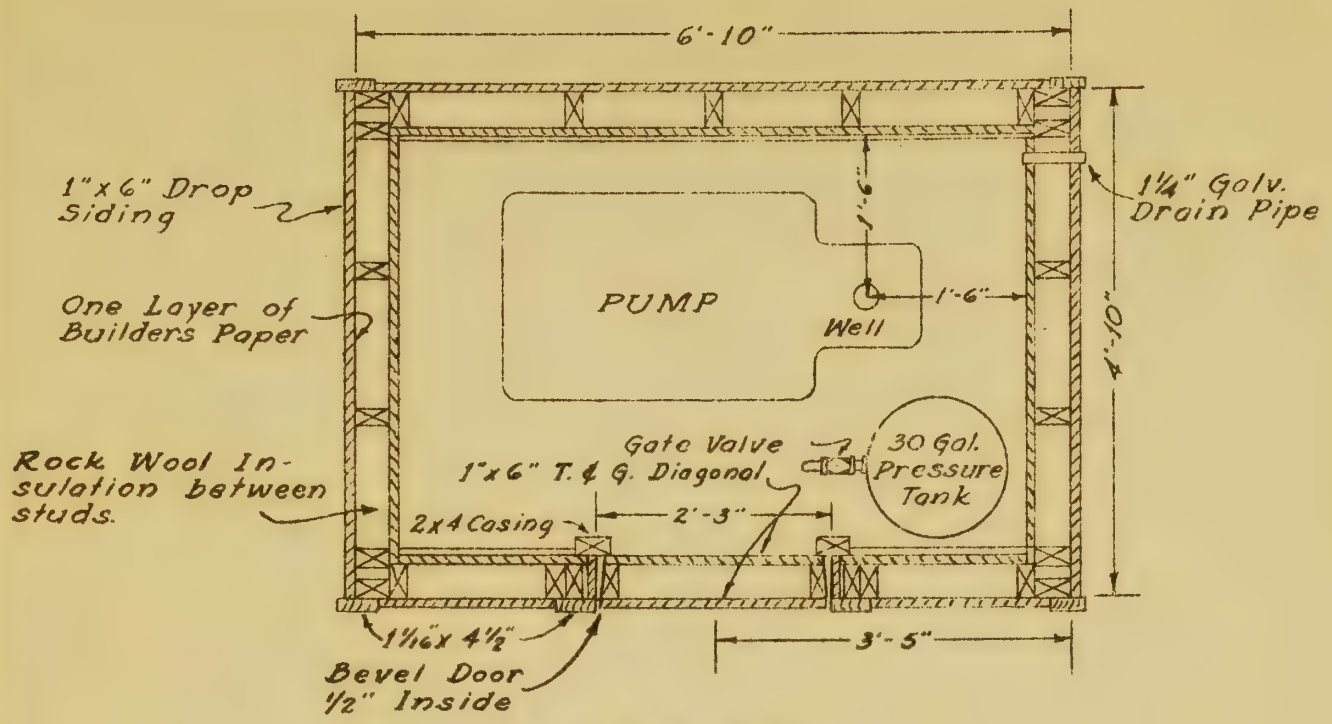
ELEVATED TANK AND TOWER – NO. 2

FARM SECURITY ADMINISTRATION

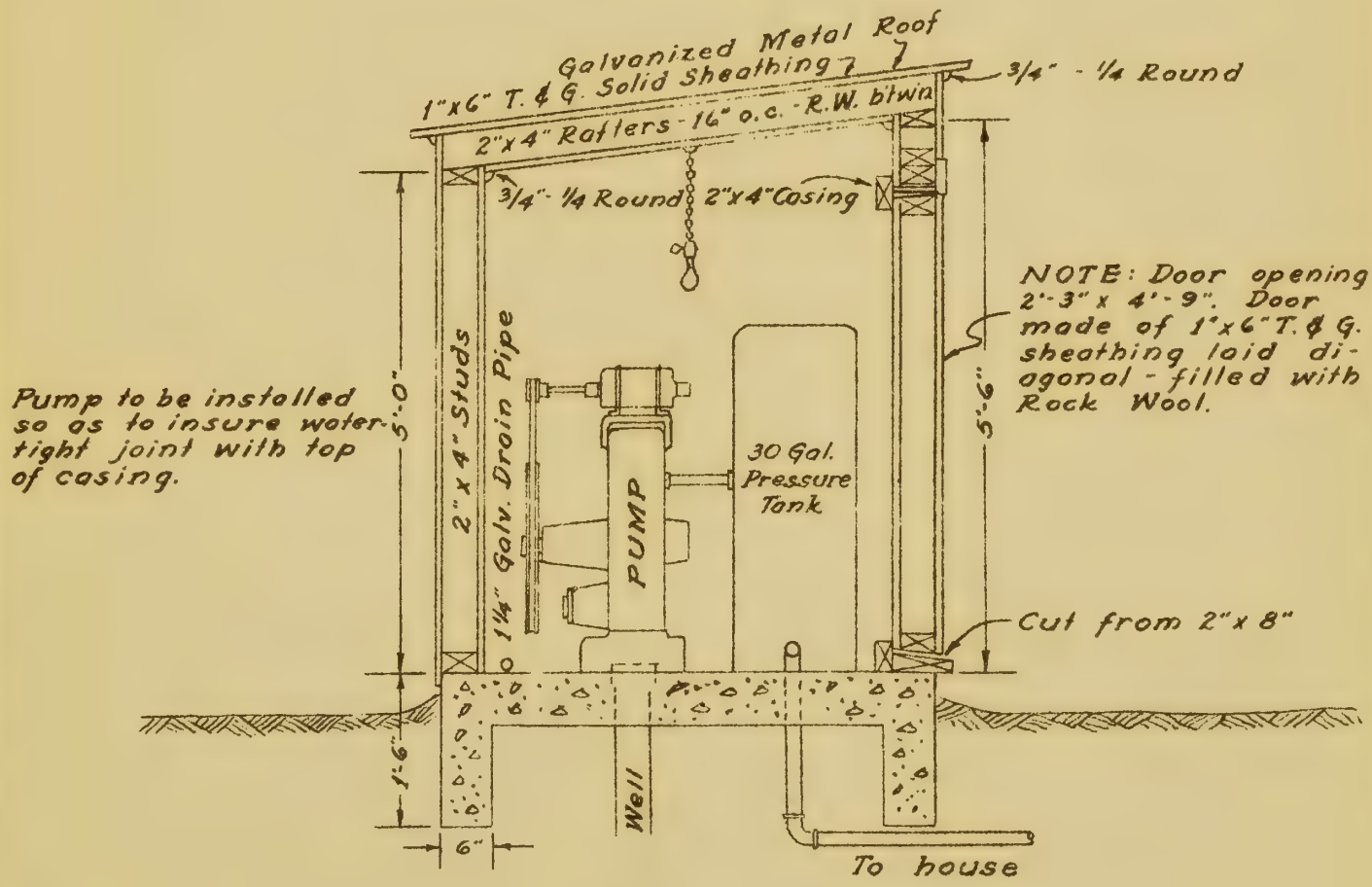
DISTRICT I REGION IV RALEIGH, N. C.

PUMP HOUSES

GENERAL In many localities due to extreme low temperatures, it is necessary to construct frost-proof pump houses where outside pressure systems are employed. On the following two pages are shown two types of pump houses which will meet these conditions, and which at the same time can be rather economically constructed.



PLAN



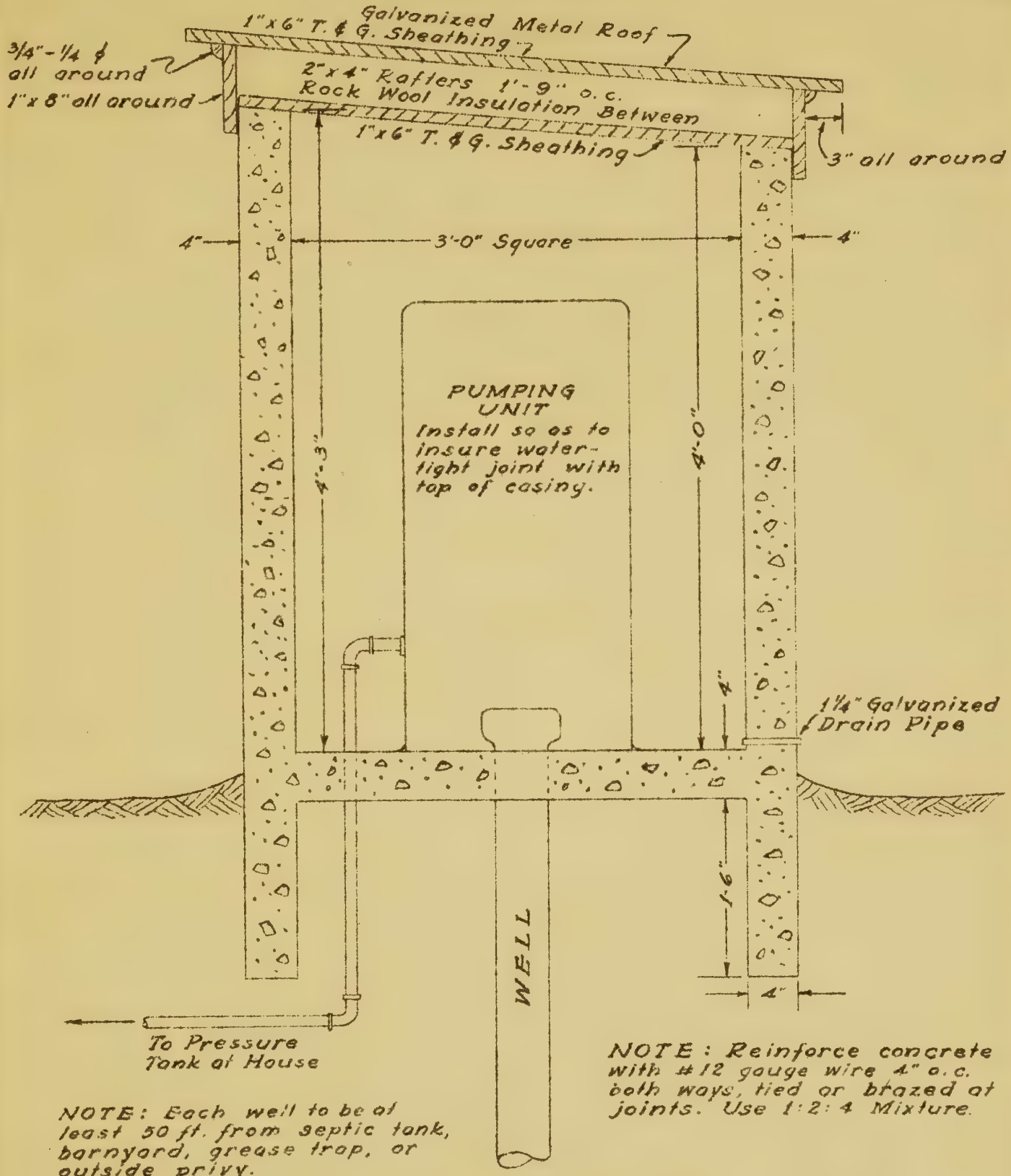
SECTION

PLATE WS-PH-1

FROST PROOF PUMP HOUSE - NO. 1

FARM SECURITY ADMINISTRATION

DISTRICT 1 REGION IV RALEIGH, N. C.



SECTION

PLATE WS-PH-2

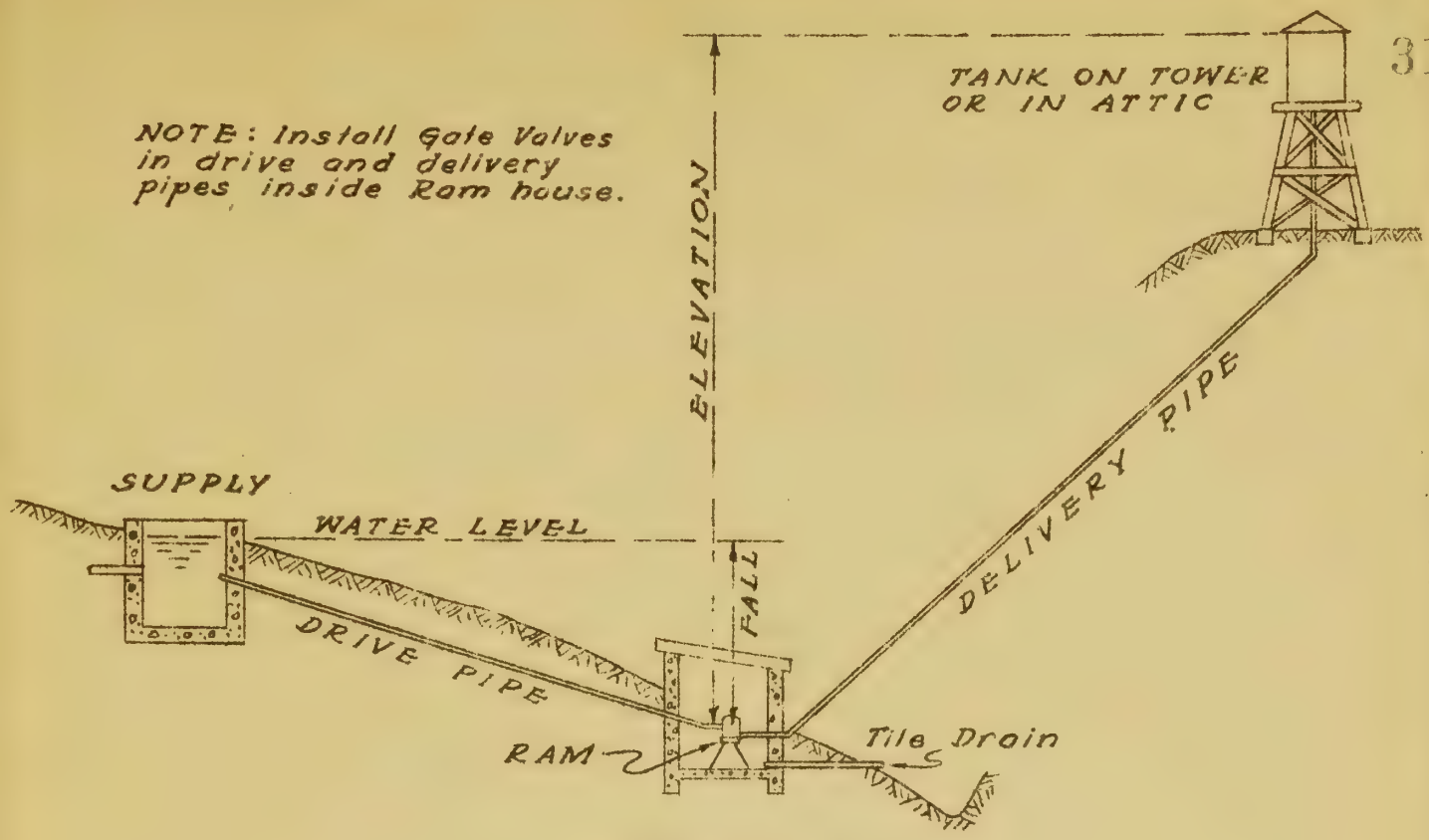
FROST PROOF PUMP HOUSE - NO. 2

FARM SECURITY ADMINISTRATION

DISTRICT I REGION IV RALEIGH, N. C.

RAM INSTALLATION

Often where a sufficient supply of water is available, the use of a ram is employed for furnishing a supply of water to the house or to some storage tank located so as to serve the needs of the family and stock on the farm. A typical discussion on the requirements for the installation of such a ram is given on the following page and any additional information needed in selecting a ram for any particular farmstead will be gladly supplied by the District Engineer's Office upon request.

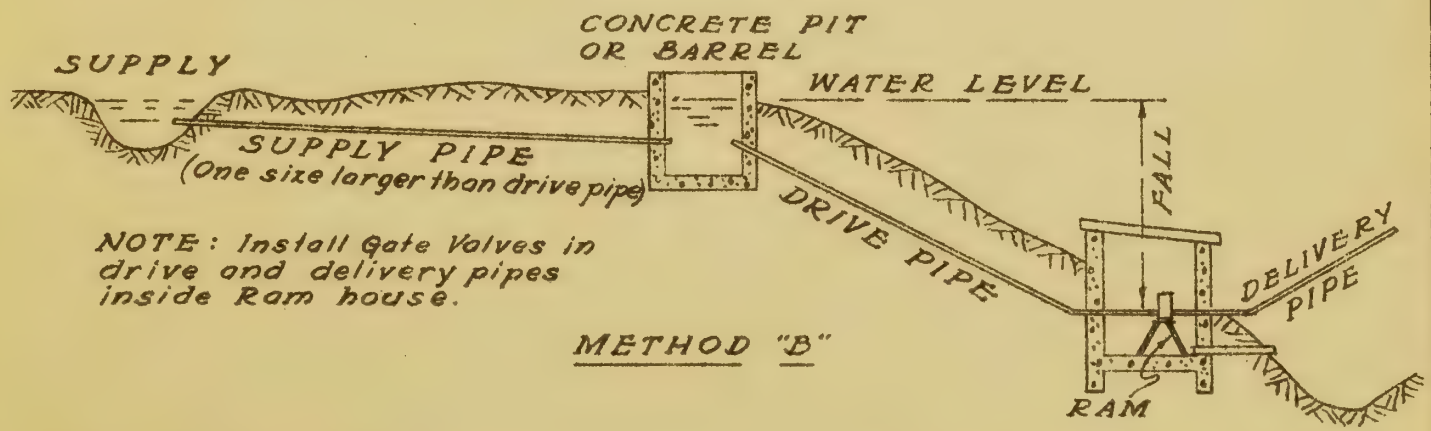


METHOD "A"

INFORMATION REQUIRED FOR RAM INSTALLATIONS

1. Flow of supply water in gallons per minute. Do not guess. Measure.
2. Vertical fall in feet from source of supply to location of Ram.
3. Distance between point of supply & location of Ram. Length of drive pipe should never be less than 5 nor more than 10 times the head of fall under which ram is placed.
4. Vertical height, or Elevation, above ram the water is to be raised.
5. Pipe line distance water is to be delivered.
6. Number of gallons required per day.

NOTE: The method of protecting the source of supply, the intermediate pit or barrel, the ram house, and method of storing or disposing of water at point of discharge, should be designed to meet local conditions.



METHOD "B"

PLATE WS-HR-1

Not Drawn to Scale

TYPICAL RAM INSTALLATIONS

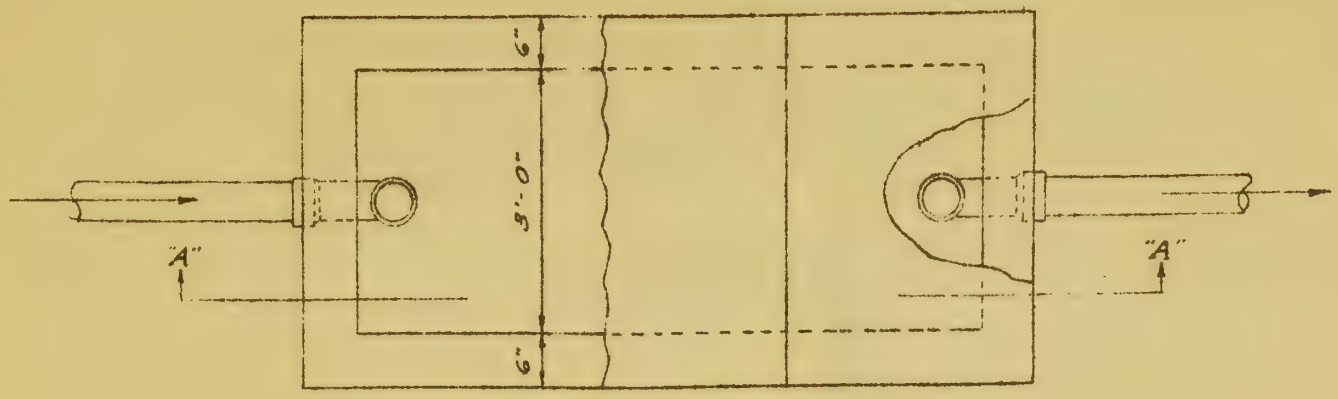
FARM SECURITY ADMINISTRATION

DISTRICT I REGION IV RALEIGH, N.C.

PART II - SANITATION

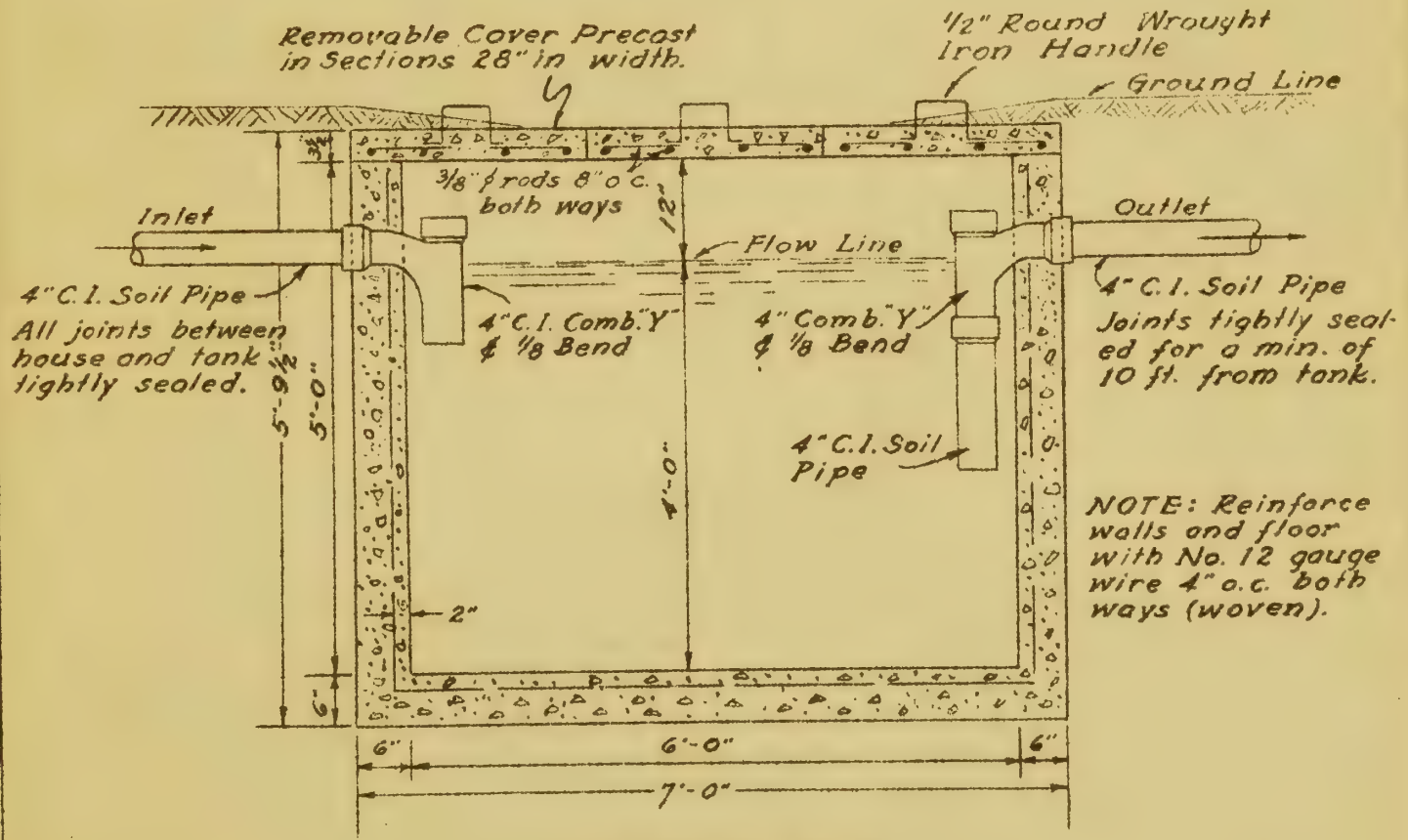
SEPTIC TANKS

GENERAL In selecting a septic tank, the recommendations of the Health Officer in the County in which the septic tank is to be constructed should be obtained. The Health Officer will gladly cooperate in recommending the number of lineal feet of drain tile which is required to meet the conditions of the soil in that particular County in order that the septic tank will operate properly. There are listed herein two types of septic tanks together with a typical sewage disposal field. Before selecting one of these two types, the final decision should rest with the County Health Officer or one that is familiar with the health requirements in that particular County.



PLAN

NOTE: Septic tank to be of least 50 ft. from well or water supply



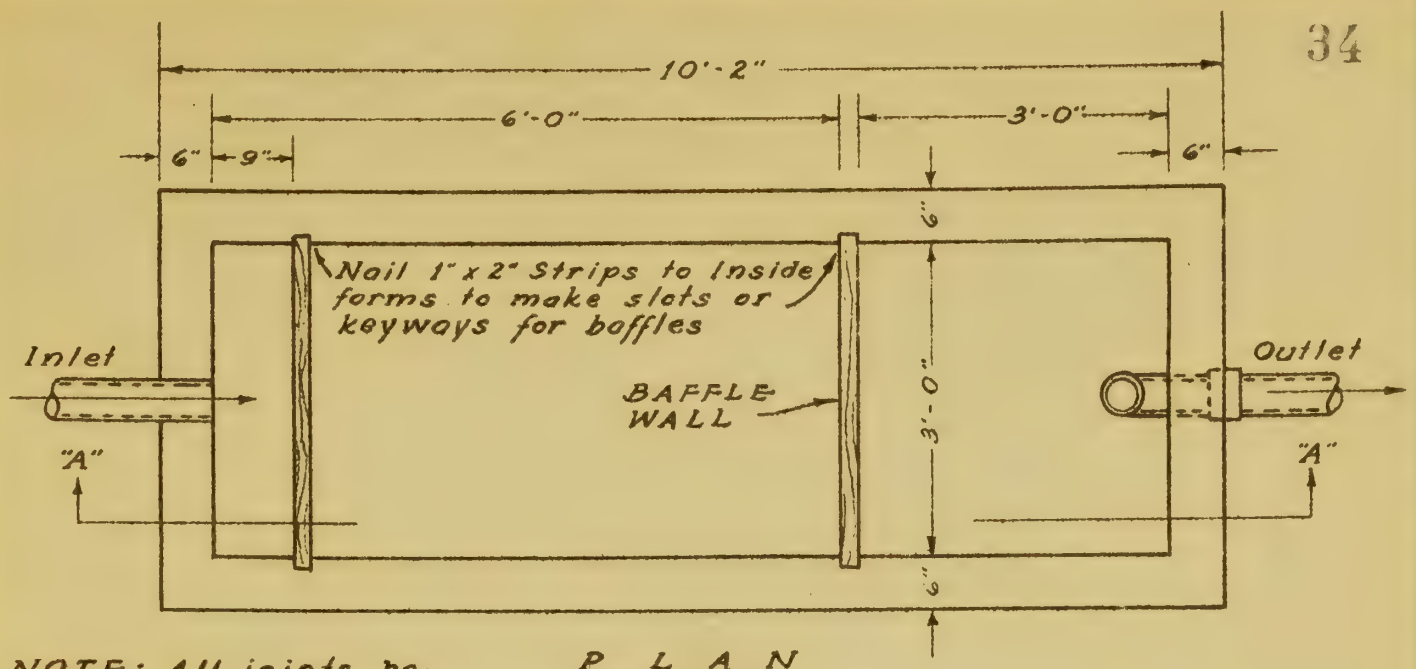
SECTION "A"-"A"

PLATE SD-ST-1

540 GAL. SEPTIC TANK

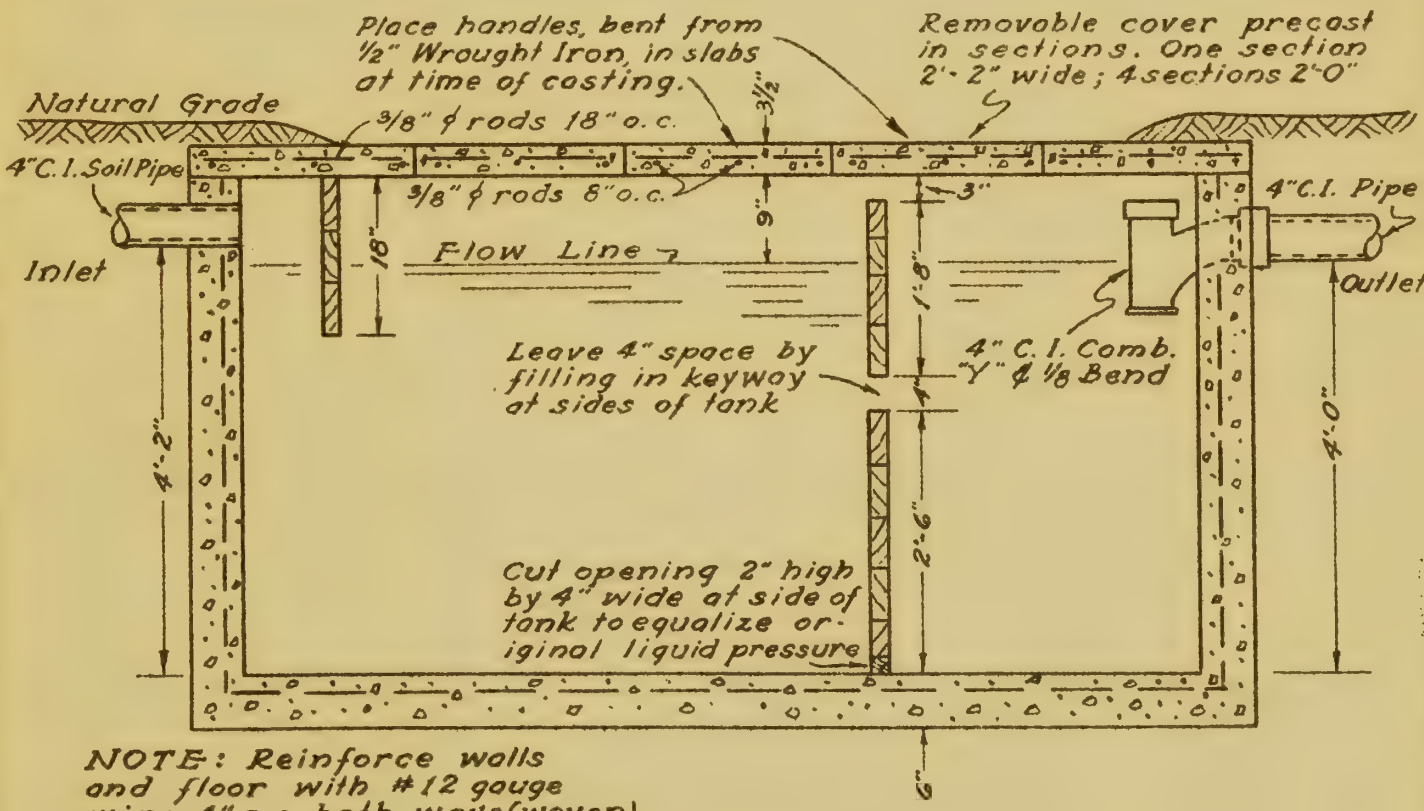
FARM SECURITY ADMINISTRATION

DISTRICT 1 REGION IV RALEIGH, N.C.



NOTE: All joints between tank and house as well as outlet for a min. of 10 ft., to be tightly sealed.

PLAN
Cover Removed



NOTE: Reinforce walls and floor with #12 gauge wire 4" o.c. both ways (woven)

SECTION "A"-"A"

NOTE: Septic tank to be at least 50 ft. from well or water supply.

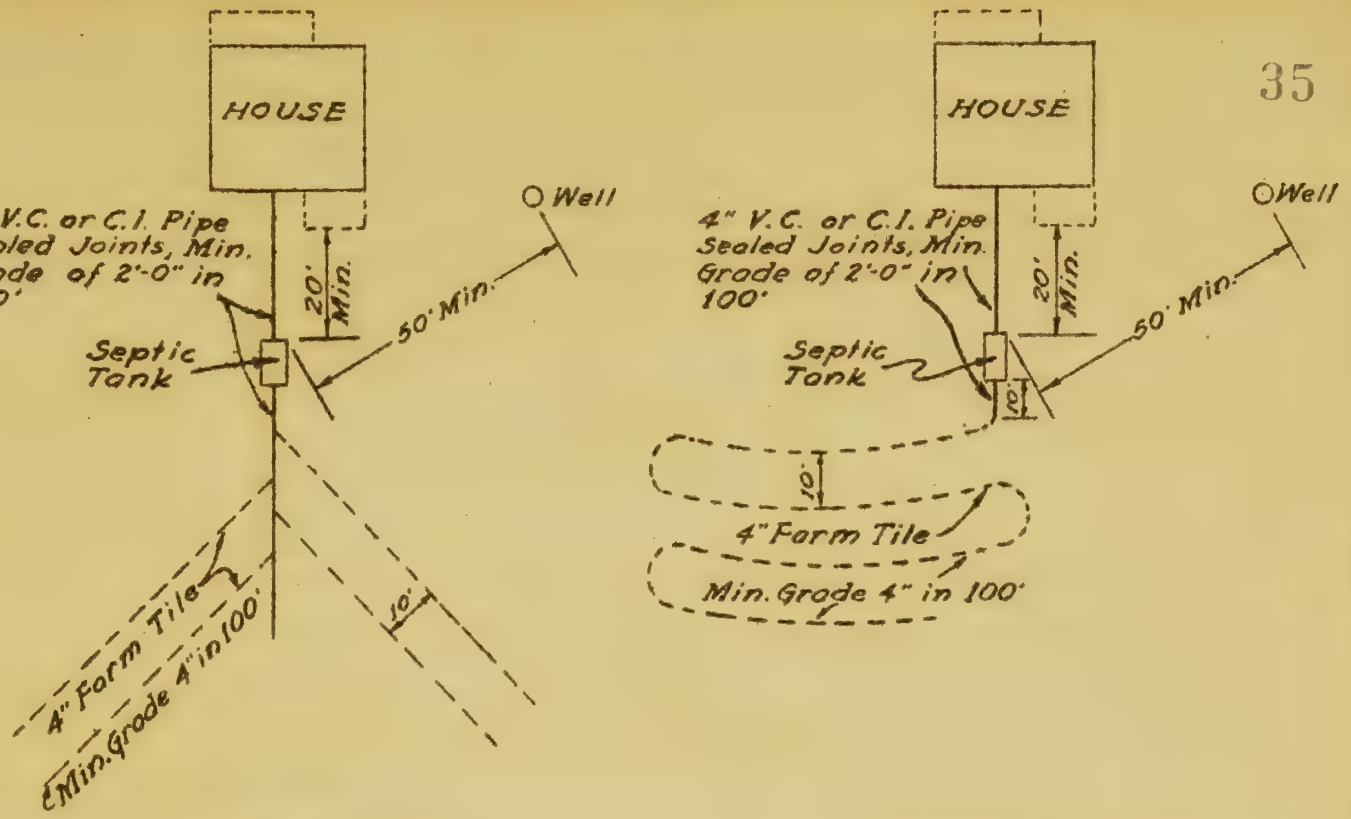
PLATE SD-ST-2

Scale: ½" = 1'-0"

800 GAL. SEPTIC TANK

FARM SECURITY ADMINISTRATION

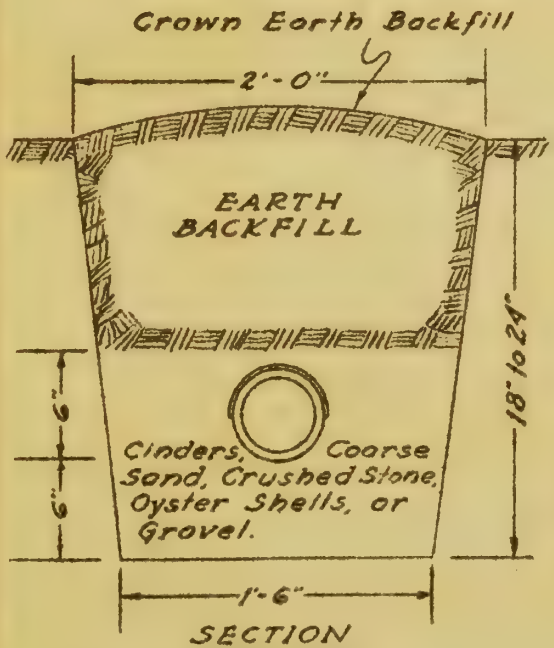
DISTRICT I REGION IV RALEIGH, N.C.



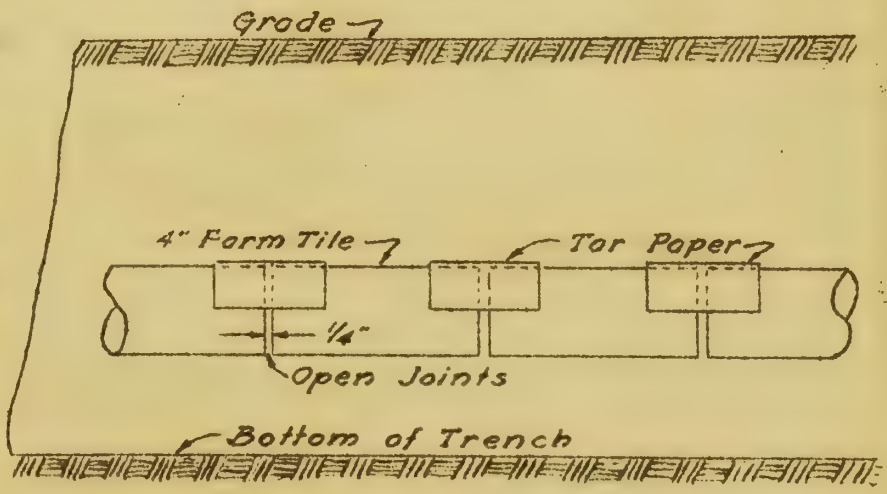
LEVEL GROUND

SLOPING GROUND

TYPICAL DRAIN TILE PLANS
Not to Scale



SECTION



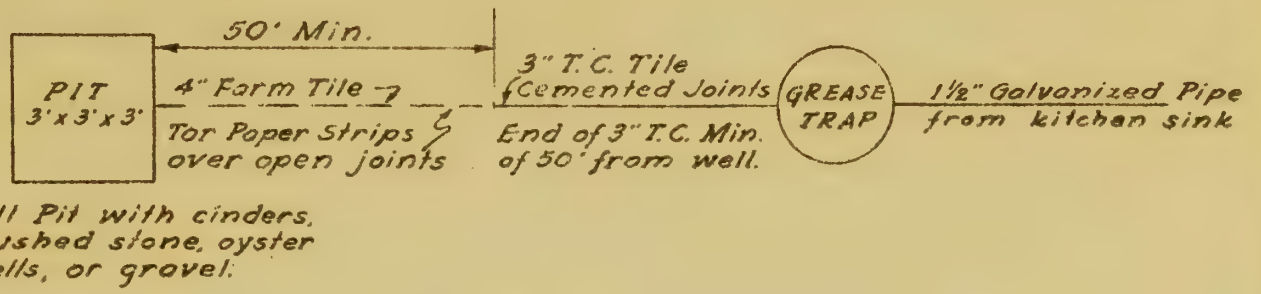
ELEVATION OF TRENCH

PLATE SD-DF-1

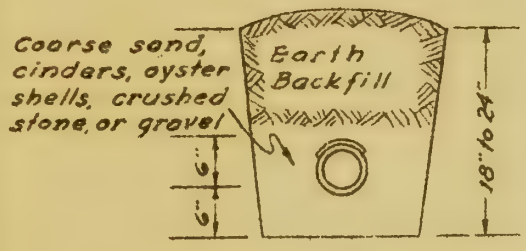
TYPICAL SEWAGE DISPOSAL FIELDS

FARM SECURITY ADMINISTRATION

DISTRICT I REGION IV RALEIGH, N. C.



PLAN
Not to Scale



SECTION OF TRENCH

GREASE TRAP

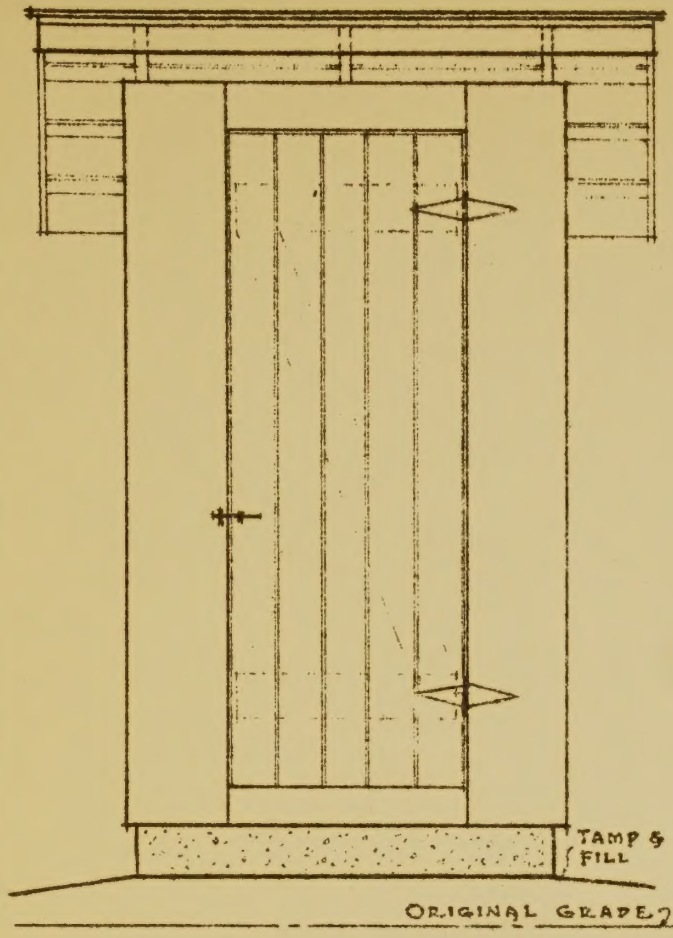
SECTION

PLATE W-GT-1

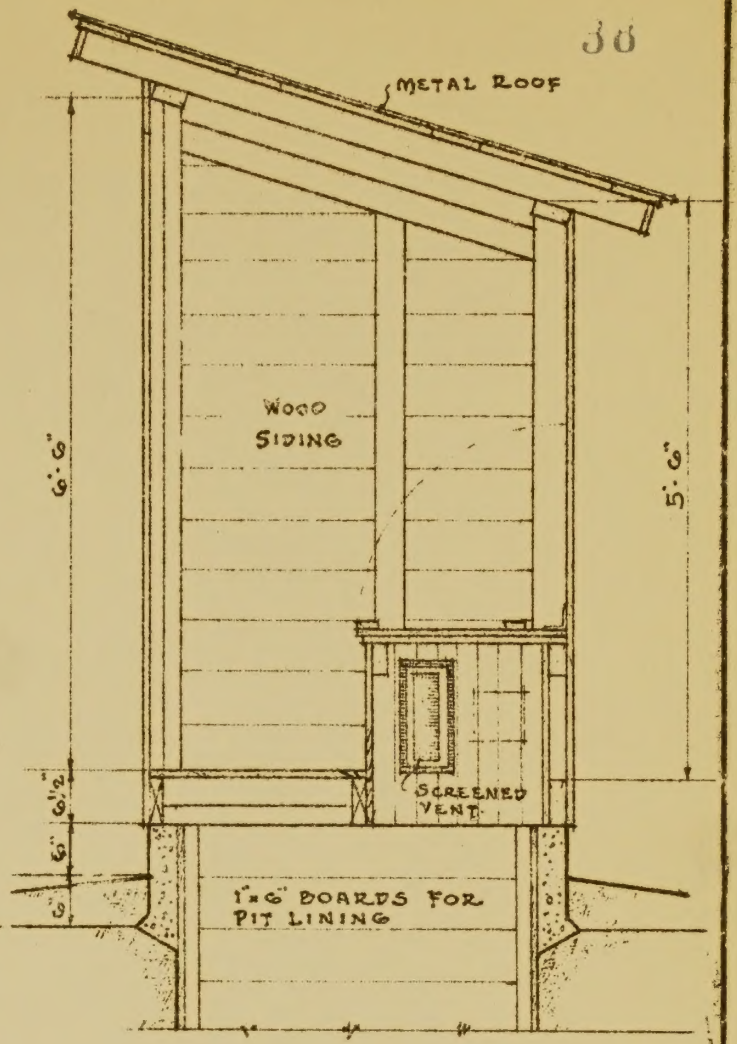
TERRA COTTA GREASE TRAP
FARM SECURITY ADMINISTRATION
DISTRICT I REGION IV RALEIGH, N.C.

OUTSIDE PRIVIES

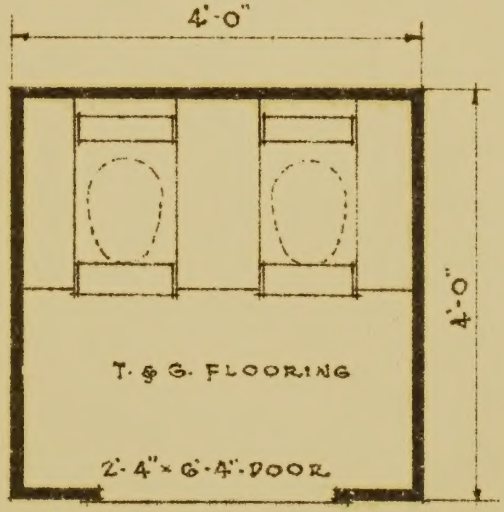
GENERAL In place of septic tanks and disposal fields, outside privies are often employed. On the following page is shown a privy of an approved type which will satisfactorily fill the needs of the typical farm dwelling.



~ FRONT ELEVATION ~



~ SECTION ~



~ FLOOR PLAN ~

PRIVY NO. 4111.3

FARM SECURITY ADMINISTRATION

DISTRICT I REGION IV RALEIGH, N. C.